

HOW TO MAKE YOUR STOCK MOTOR FASTER

Radio Control

47380

November 1992

CAR ACTION

THE WORLD'S PREMIER R/C CAR MAGAZINE

1/10TH-SCALE

GAS EXPLOSION

NITRO-POWERED
RC 10T

PROJECT IMPACT
KYOSHO'S GAS
T-BIRD STOCKER

GO FAST,
Spend Less
FUTABA'S

FX-T

ONE IN 2 SECONDS!



DRAW RACING
WORLD CHAMPS

USA \$3.95 CANADA \$4.50



CUSTOM WORKS
ENFORCER
CLINT GOES SPRINT!

TEKIN

410K

FUTURISTIC
FETS



See
page
98

Radio Control CAR ACTION

VOLUME 7, NUMBER 11 • NOVEMBER 1992

TRACK REPORTS

28 CUSTOM WORKS ENFORCER

by Frank Masi
Feel lucky, punk?

81 KYOSHO THUNDERBIRD

by Jim Shepka
Flying high

89 FUTABA FXT

by Stan VanDruff
Such a deal!

38 PARMA HEMI 'VETTE

by Gerry Yarrish
Too cool

DEPARTMENTS

6 EDITORIAL

by Frank Masi

17 INSIDE SCOOP

by Chris Chianelli

8 LETTERS

20 READERS' RIDES

10 PIT TIPS

by Jim Newman

184 WHAT'S NEW

194 AD INDEX

◀ IEDA Worlds Drag
Races, page 116



COLUMNS

24 TROUBLESHOOTING

by Frank Masi

76 SCOPING OUT

by John Rist
Tekin 410K

144 NITRO NEWS

by Jeff Bronstein

RADIO CONTROL RACER

109 RACER NEWS

114 LIGHTNING STEADY LIFT JR.

by Jim Shepka
A stand for all seasons

122 SPEED SHOP

125 STOCK MOTOR MYSTERIES

by Frank Calandra
Secrets revealed!

128 1992 ROAR OVAL NATS

by Jim Shepka
Riding with the King

▼ 1992 ROAR Oval Nats, page 128

114 VANTAGE DIGI-CHARGE

by Jim Shepka
Peak your packs

116 IEDA WORLDS DRAG RACES

by Mike Ogle
R/C's fastest cars?



Project Impact, page 49



FEATURES

49

PROJECT IMPACT

by Jeff Bronstein • Brace yourselves!

56

NORRCA MICKEY THOMPSON OFF-ROAD RACING

by Jim Shepka • Tracksides in Texas

60

A WINNING ATTITUDE, PART I

by Stan VanDruff • Think like a champ

62

PROJECT RC10L

by Mike Lee • Improving a classic

98

DUDGEON RACING GAS RC10T

by Frank Masi • Kunio's creation

141

MRP BUD DRY INBOARD SKATER

by Doug Samrah • Get wet!

ON THE COVER:

Dominating this month's cover is Kunio Dudgeon's latest creation: an awesome RC10T Gas Conversion. Flip to page 98 for all the dirt. (Photo by Walter Sidas; body by Richard Muise of Motion Graphics.)

Radio Control Car Action (ISSN 0886-1609) is published monthly by Air Age, Inc., 251 Danbury Rd., Wilton, CT 06897. Second Class postage paid at Wilton, Connecticut, and at additional mailing offices. Subscription rates are 1 year (12 issues) \$29.95 (foreign \$42.95); 2 years (24 issues) \$54.95 (foreign \$80.95). Send Form 3579 to Radio Control Car Action, P.O. Box 427, Mount Morris, IL 61054.

EDITORIAL

by FRANK MASI



I'm pleased to welcome John Howell to the editorial staff of Car Action. John (right) comes to us from L.A., where he worked for Hi-Torque Publishing (best known for Mountain Bike Action, Motocross Action and Dirt Bike magazines). We expect great things from John, whose many talents include photography, writing and making peanut butter and jelly sandwiches without utensils.

...AND THEY TELL TWO FRIENDS...

"Shut up, Chris!" I kept saying. "What, are you afraid I'll beat you?" smirked Chianelli. "Yes! That's it, you're afraid you'll have to bow before my vastly superior driving skill." Shut up, Chris.

Chris wants to go racing. Not in the sense I'm used to—organized qualifiers and main events, intense competition, the whole nine yards. Chris just likes to drive R/C cars; he drives them forward, backward, upside-down, every way. "But I don't have any of my stuff with me, you complete and utter buffoon," I said. "No big deal," said Chris. "We have plenty of cars and radios here at the office." He was right. We grabbed a couple of cars; mine was a Tamiya Jordan 191 Formula One car, and he liberated a Tamiya Sauber Mercedes from the *Car Action* "impound" shelves. Radios in hand, we were off.

At a local parking lot (known as "Makeout Flats"), we laid out a rough racecourse using whatever objects were available to us (mostly empty mousse cans from the back of Chianelli's Montero). I hadn't raced Chris in a long time, so I'd almost forgotten his patented "use-the-other-cars-as-corner-boards" driving style. Each time his Mercedes careened off of my Jordan, Chianelli let loose a squeal of delight like a prepubescent girl. I'm used to racing with considerate, clean drivers, so it took me a while to retaliate. Soon, I was back up to the Mercedes, trading paint and tire foam, all the time shouting at Chris and having the time of my life.

Who won? Who cares. We had a lot of fun, and for the first time in weeks, I didn't think about work, or bills, or taxes, or whatever. The next time we race, we'll have company; four other people from the office have bought cars. "More to bash!" screams Chris. Tell a friend. ■

Radio Control CAR ACTION

Group Publisher LOUIS V. DeFRANCESCO JR.
Publisher DR. LOUIS V. DeFRANCESCO
Associate Publisher YVONNE M. DeFRANCESCO

Executive Editor FRANK R. MASI
Managing Editor LI AGEN
Alleged Editor CHRIS CHIANELLI
Associate Editor JOHN HUBER
Junior Associate ALEX STROUTHOPOULOS

Copy Director LYNNE SEWELL
Copy Editors KATHERINE TOLLIVER
LAURA M. KIDDER
DEBORAH S. CARROLL
KAREN JEFFCOAT

Corporate Art Director ALAN J. PALERMO
Associate Art Director MARY LOU RAMOS
Assistant Art Directors BETTY KOMARNICKI
JONATHAN T. KLEIN
MATTHEW J. LONGLEY
Art Assistants STEPHANIE L. WARZECHA
ALLYSON NICKOWITZ
Promotional Artist ROBIN DEMOUGEOT
Staff Photographers WALTER SIDAS
LISA KNORRA

Systems Manager EDWARD P. SCHENK
Systems Coordinator JEFF WASILKO

Director of Marketing GARY DOLZALL
Circulation Manager KATHLEEN RHODES
Marketing Manager PAULINE A. GERRY
Circulation Assistant KYRA MATERASSO

Production Manager MARY REID McELWEE

Advertising Director STEPHEN W. WITTHOFT
Advertising Account Representative (East) KURT G. SWENSON
Advertising Account Representative (Midwest) MICHAEL S. STANKIEWICZ
Advertising Account Representative (West) SHARON WARNER
Advertising Traffic Coordinator ELISE SILKOWSKI

SUBSCRIPTION PRICES:

U.S. & Possessions (including APO & FPO): 1 year (12 issues) \$29.95; 2 years (24 issues) \$54.95. Outside U.S.: 1 year \$42.95; 2 years \$80.95. Payment in U.S. funds.

Subscription Inquiries: 1-800-877-5169

RADIO CONTROL CAR ACTION (ISSN 0886-1609) is published monthly by Air Age, Inc., 251 Danbury Rd., Wilton, CT 06897, USA. Connecticut Editorial and Business Office, 251 Danbury Rd., Wilton, CT 06897. Phone: 203-834-2900. FAX: 203-762-9803. Y.P. Johnson, President; G.E. DeFrancesco, Vice President; L.V. DeFrancesco, Secretary; Yvonne M. DeFrancesco, Treasurer. Second Class Postage Permit paid at Wilton, Connecticut, and additional Mailing Offices. Copyright 1992 by Air Age, Inc. All rights reserved.

CONTRIBUTIONS: All materials published in *Radio Control Car Action* become the exclusive property of Air Age, Inc., unless prior arrangement is made in writing with the Publisher. The Publisher assumes no responsibility for unsolicited material. Only material accompanied by a SASE will be returned.

ADVERTISING: Advertising rates available on request. Please send advertising materials, insertion orders, etc., to *Radio Control Car Action*, Advertising Dept., Air Age, Inc., 251 Danbury Rd., Wilton, CT 06897. Phone: 203-834-2900. FAX: 203-762-9803.

CHANGE OF ADDRESS: Don't miss any issues! Send your new address to *Radio Control Car Action*, Subscription Dept., P.O. Box 427, Mount Morris, IL 61054, six weeks before you move. Include the address label from a recent issue, or print the information exactly as shown on the label. The Post Office will not forward copies unless you provide extra postage. Duplicate issues cannot be sent.

POSTMASTER: Please send Form 3579 to *Radio Control Car Action*, P.O. Box 427, Mount Morris, IL 61054.

Member Audit Bureau of Circulations
PRINTED IN THE USA



HOBBY BARN

P.O. BOX 17856
TUCSON, ARIZONA 85731

TEAM ASSOCIATED

2WD RC10T RACE TRUCK

HOBBY BARN
SPECIAL \$168.99



RC-10

+6011

\$122.99



RC10 TEAM CAR GRAPH. \$176.99

STEALTH TRANSMISSION \$68.99

KYOSHO CARS

RAIDER PRO \$78.99



RAIDER PRO ARR \$88.99

ULTIMA II \$128.99

TURBO ULTIMA II \$188.99



DOUBLE DARE \$166.99

BIG BRUTE \$96.99

BIG BOSS \$119.99

USA-1 4WD. TRUCK \$225.99



TAMIYA

CLODBUSTER
SALE PRICE
\$239.99



The Bigwig \$189.99

Blackfoot Truck \$99.99



Monster Beetle \$144.99

Lunch Box \$90.99



Midnight Pumpkin \$115.99

Grasshopper II \$78.99

peak your battery



Hobbico 930 Peak Charger

Hobby Barn Special \$59.99

POSTAGE AND HANDLING and insurance add \$5.00

Call (602) 747-3633

immediate shipment

FAX 602 747-3792

For ALL Your RC Needs...

- RC Cars, Parts & Accessories
- Two Indoor Tracks (clay & carpet)
- One Outdoor Track • Pulling Pit
- Computerized Scoring • Competitive Racing
- Friendly, Expert Service
- UPS Service • Discount Prices • Major Credit Cards



WALT'S
HOBBY

(315) 453-2291

2 Dwight Park Drive, Syracuse, NY 13209

LETTERS

JUMP BACK, WANNA KISS MYSELF...HEY!!!

I first must congratulate you on an excellent mag. Totally great! I have a few questions and I figured, why mess around when I can go straight to the pros?

1. Why do the Novak 410-MXc and the 410-M1c have only three motor and battery leads? How the heck can that work? It makes no sense to me!

2. The controllers in the Novak 410 series all have an extra red wire near the receiver wires and on/off switch wires. What is it? Does it have to do with BEC?

3. Can the Futaba MC210CB handle a 13-turn motor or will it fry?

4. When will you do a track report on the Futaba FX-T? Will its ball diff fit in place of the planetary diff on the FX-10?

5. I noticed that "I love Li" is written in many of the "Troubleshooting" illustrations. Is Li G. Yarrish's honey? Or could it be his mom? 6. In the Cactus Classic, I saw that the winner in Modified Truck class was James Brown. Is the King of Soul now into R/C? I bet he "feels good" about his success. Boy, what a tabloid headline this would make!

MICHAEL LOBELLO
Lake Ariel, PA

In keeping with your "Why mess around?" attitude, here are the answers to your questions:

1. Novak (and most other manufacturers of racing-type speed controllers) use the three-wire system to minimize resistance and make the controller as efficient as possible when it's hooked to the motor and the battery. Three-wire setups are simple: both positive leads in a four-wire controller are attached to the circuit board in the same location, so eliminating one and running a separate positive lead from the battery's positive terminal to the motor's positive lug accomplishes the same task with less wire. For details on how to hook up a three-wire controller, see the article "How to Install Radio Gear" in the June '92 issue.

2. The extra red wire protruding from Novak's 410-series speed controllers is for use with FET-booster steering servos. The servo is hooked to the red wire, which bypasses the ESC's voltage regulator to provide the battery's full voltage to the servo's FET

booster. Also, hooking FET servos into this red lead allows the servo to be switched on and off with the ESC.

3. Futaba's MC210CB has the same amp rating as the company's popular MC112B, but the 210 features a fuse for added protection. In general, Futaba recommends that you use motors in the 18-turn range and up, but you can use lower-turn motors if you follow certain guidelines: mount the ESC so that it receives maximum airflow for cooling and make sure that you don't "overgear" (this can overheat the motor and the controller).

4. For info on the FX-T, check out Stan VanDruff's "Track Report" in this issue. The FX-T is vastly different from the FX-10, so its ball diff isn't compatible with the FX-10's transmission.

5. We're not exactly sure who "Li" is, but I suspect that "Li" is an alias for none other than Brigitte Peugeot, lovely mistress of R/C pitchforks. If I'm right, it's no wonder that G. Yarrish loves her. All men worship Brigitte! 6. Nope, sorry, different James Brown. It's rumored that The Godfather of Soul once tried R/C racing, but was asked to leave the track because he yelled too much at the turn marshals: "Marshal, hey...good God a'mighty, get my car...awwww...ungh!"

FM

MAYBE SOMEDAY

As I read a few of my back issues, I noticed that in the "Christmas Wish List" in the December '91 issue and in the '89 Stealth article in the April '92 issue, you said that Associated may start to produce the new Stealth car in the summer, which has come and gone. I'm wondering: are they still going to produce the Stealth car?

PHILIP ROSS
Jonesboro, AR

Yes, Philip, Associated will produce the Stealth car. The latest word is that there isn't a production date and that the car is still undergoing further development. Apparently, Cliff Lett is having problems with the anti-lock front and rear brakes, and they can't get the air conditioning to work right. (Just kidding, Cliff!) When I spoke with Cliff, he said, "Associated will sell no Stealth before its time." Don't worry, as soon as Associated is ready with more info, we'll pass it along. JPH

ATTENTION RACE DIRECTORS!!

Here's what people are saying about the

LC-1000 ...

"...better than systems five times its cost."

Sugar Hollow Raceway

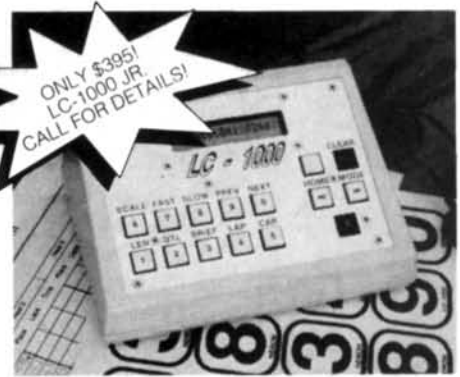
"... easy to use."

I recommend it highly ..."

Hobby Mechandiser

"...the best solution...with quick and accurate results"

Radio Control Model Cars



Are you tired of the error prone, tedious process of lap counting using pencil marks or mechanical counters? Don't want to tear down and set up your expensive, fragile computer for your races? Not ready to spend thousands on an awkward transponder system? Then the **LC-1000** is for you!

The **LC-1000** is a complete 64K microcomputer based lap management system, yet it is so portable you can carry it in one hand and run it an entire race day on a 7.2V pack.

Call your races like a pro with the on screen clock, lap count info displayed in lead car order and audible start/finish cues. Provides complete race statistics including MPH and all lap times for up to 10 cars. The **LC-1000** homes in on questionable lap times for quick and accurate result verification.

The complete **LC-1000** lap management computer with software, racing forms and stick on numbers is only \$695. Optional hand held wired remote pushbuttons are available for \$7.95 each. For race results you can count on, order yours today!

For more information or to order your **LC-1000** call or write Neron Associates, P.O. Box 348, Germantown, MD 20875 (301) 972-0397

AVOID WIMPINESS

I've been involved with R/C off-road truck racing for about two years. I don't know all the tricks and tools of the trade yet, but I'm sure that if I keep reading *Car Action* I'll learn all I can. Lately, I've been pondering whether or not I should start racing competitively. I made my dad read the article "Avoid the Parent-Wimp Syndrome" in the July '92 issue, and it persuaded him to get involved in this great hobby. He said that he'd not only help me buy equipment, but that he'd also race with me. Thanks for printing that article. I'd also like to know, since it makes sense to have more than one motor for my truck, whether using connectors on the motor and speed controller wires would hurt my motor's performance. I use an 11-turn Team Losi motor. Any suggestions would be greatly appreciated. I love your awesome magazine.

BLAINE MITTEN
Wilton, CT

Competitive R/C racing is a lot of fun, but keep in mind that the general atmosphere at an organized event can be pretty serious. Track officials often frown upon racers who don't know proper procedures, so take the time to find out the rules and regulations of your club before you take one lap on the track.

Now that your dad's avoided the PW syndrome, it's time you learned how to properly perform the MSJGATGE (Make Sure Junior Gets All The Good Equipment) technique. This method contains such useful phrases as, "Use this pack, dad, it's killer," "No dad, the lower the number, the longer the run time," and the always effective, "When the motor smokes, it means it's working awesome."

I recommend using connectors for battery-to-speed controller connections, especially in off-road cars; many outdoor tracks don't have electricity for soldering irons. Using connectors to hook the motor to the speed controller is optional; it's possible to clean a motor while it's still hooked to the ESC. The only inconvenience that soldering the motor to the ESC presents is that it makes changing motors difficult. In any case, invest in the highest quality connectors that your budget will allow.

FM

(Continued on page 183)

Performance Products for the R/C Industry

JR DESIGNS

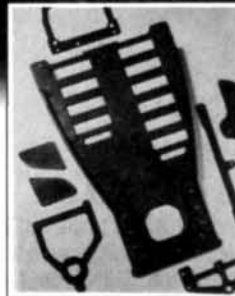
"Cool" Charger Stands for TEXIN, Hi-10 and others. USED BY THE PROS!



• High Tech Acrylic Car Stands in several hot styles and colors: Tilt • Straight • W/Pinon Caddy

JR Designs • 1225 N. Lance Ln. • Anaheim, CA 92806 • (714) 630-0669

NEW! Molded Composite Chassis! for Associated 10-L Components



"SHORT TRACKER" or "HIGH BANK" • Non-Conductive, Exclusive Lightweight Composite Ready-to-Run...No Filing Edges! • Economically Priced

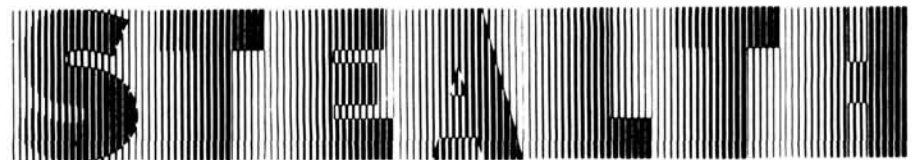
CKW Mfg. • 1889 W. Commonwealth, Unit 1 • Fullerton, CA 92633 • (714) 738-1312

DEALER/DISTRIBUTOR INQUIRIES INVITED-SEND \$1.50 FOR CATALOG & INFORMATION

MADE IN THE U.S.A.

CKW

• Full line of chassis and racing components. Foam Tires in DOZENS of styles to fit most R/C Cars...and new Wrap-Around Caps! • On road • Offroad • Dirt Oval • Drags • 1/12th



B A T T E R I E S

Panasonic P-170 SCR			
Type I to 334	\$ 7.00	per cell	
Type II 335+	\$10.00	per cell	
Type III 350+	\$13.00	per cell	

Sanyo 1400 SCR			
Type I to 279	\$ 5.00	per cell	
Type II 280+	\$ 7.00	per cell	
Type III 290+	\$ 9.00	per cell	

Sanyo 1700 SCR			
Call For Prices			
Above Prices Include			
Regular Shipping and Handling			

10 Amp Constant Power Supply \$69.95

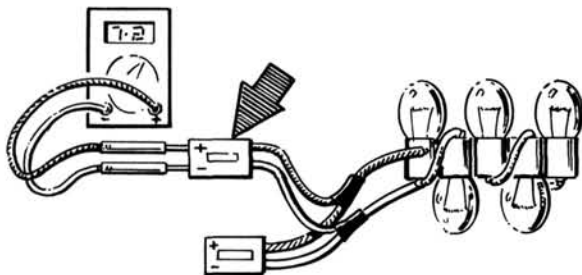
Pyramid Gold Series Power Supply
Call for Price

★ **1991 CHAMPIONSHIPS** ★
Short Track National Champs -- Modified T.O.
Calif. Dirt Oval State Champs -- Stock and Modified
Region 12 Dirt Oval Champs -- Stock
Region 12 On-Road Champs -- Stock

Stealth Electronics
5534 Las Virgenes Rd. #115 Calabasas, CA 91302
(818) 880-6845
9 - 6 Mon. - Fri.
Pacific Time

PIT TIPS

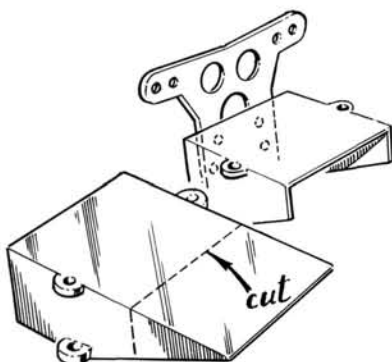
by JIM NEWMAN



DUMPSTER METER SOCKETS

Splice in an extra socket and make sure that the polarity is correct. Now you can insert your meter probes (see arrow) and monitor the pack condition as you discharge it.

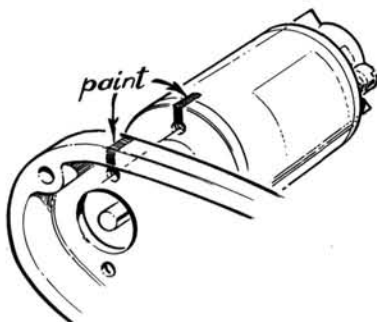
Christopher Drouin, Kahl am Main, Germany



RC10 SC SHELF

To make a lightweight speed controller shelf, cut a spare battery box as shown; drill four holes in it that align with those in the rear shock tower, and mount it with four screws and nuts.

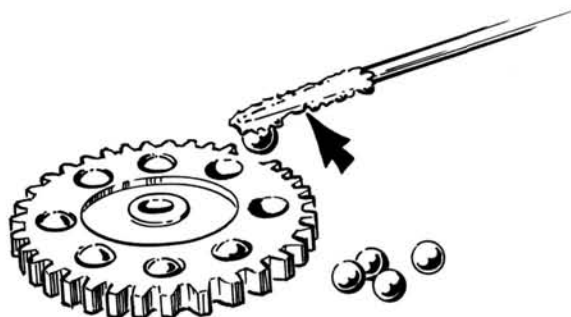
Adam Kawakami, Brooklyn, NY



SCREW-HOLE ALIGNMENT

Before you remove your Clod Buster's motor, paint a stripe across the drive case and the motor case. When you replace the motor, just line up the stripes to automatically align the top screw holes. The bottom screw holes are easily aligned by lightly pressing the pinion gear against the first counter gear.

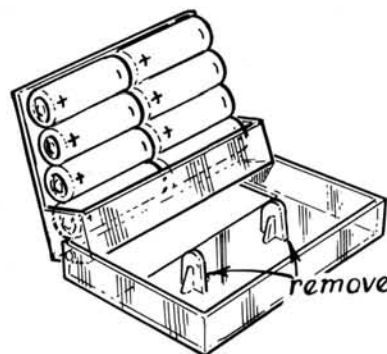
Brian Miller, Aurora, IL



STICKY PICK-UP

After you've cleaned the differential, replace the ball bearings using the end of a toothpick to which you've applied some diff lube. The lube is very tacky so it will pick up the balls much more reliably than your finger and thumb.

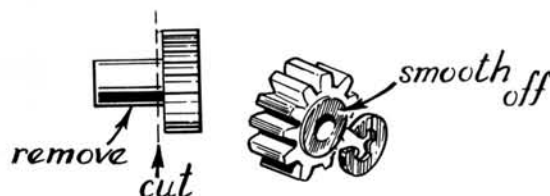
Allen Seabaugh, Cape Girardeau, MO



SPARE AA CADDY

Remove the spindles from an audio-cassette case, and then pack eight spare AA batteries in it where they'll be free from the danger of short circuits—always a hazard if they're rolling around in your pit case.

Jason Paul, Dover, NH

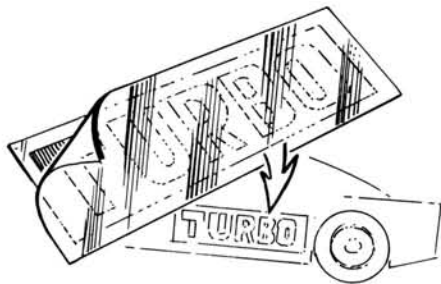


METAL RC10 IDLERS

Remove the extended collars from a spare pair of metal drive-shaft gears and file the cut faces smooth. Place the idlers on the shafts facing the E-clip grooves. Now you have metal idlers that won't become stripped the way that plastic gears do.

Bobby Schueler, Fallston, MD

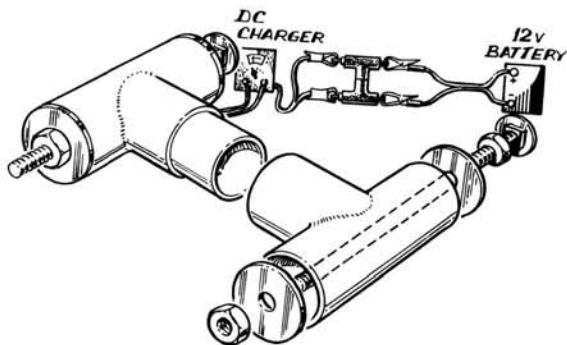
PLEASE NOTE: Be sure to print your name and full address clearly on every letter and sketch you send to Pit Tips. We have to throw away many good tips because we don't have the sender's name or address.



HOMEMADE DECALS

Cut out the designs that you want from magazines. Lay each face-down on the sticky side of clear, adhesive-backed shelf paper, then cut out the decal, leaving a margin of adhesive. Apply the decals to your car and rub them firmly.

Daniel S. Varga, Hiram, OH



BATTERY CLIP SPACER

To make this device, glue two 1/2-inch PVC Ts and a 3-inch length of 1/2-inch PVC pipe together (as shown) with pipe glue or plastic model cement. Use large washers, 1/4-inch-long carriage bolts and suitable nuts to complete the assembly. This gadget keeps crocodile clips separated to prevent dangerous short circuits.

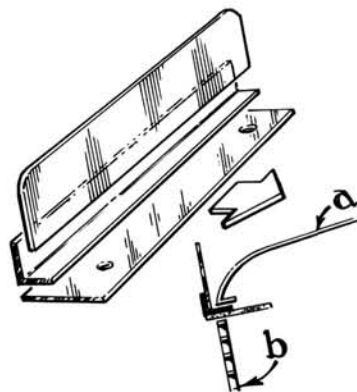
Ronald Lee, Elk Grove, CA



PORTABLE OUTLET STRIP

To ensure that you'll have enough outlets of your own at the track, use Velcro® or double-sided tape to attach a six-socket outlet strip inside the lid of your pit box.

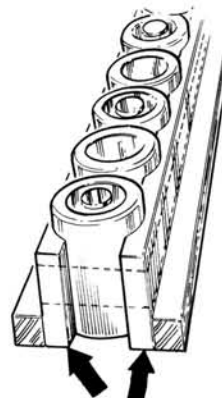
Jim Zeiher, St. Clairsville, OH



BUG SHIELD

Cut the pieces required out of clear or colored plastic stock and a piece of plastic angle stock. Glue them together as shown, then insert the assembly between the hood (a) and the grill (b), and use the existing screws to secure it.

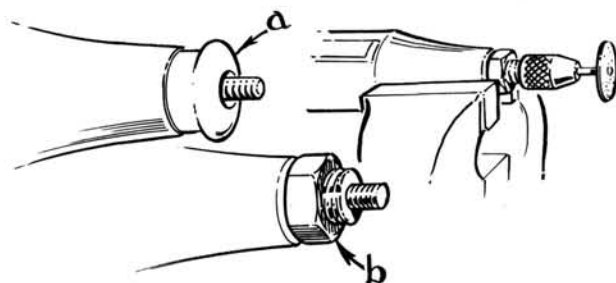
William P. Bowers Jr., Conshohocken, PA



HEAT-SINK SOLDERING JIG

To create a stable base, glue 3/4x3/4-inch wooden strips to one side of each Holeshot heat sink (see arrow). Then use tape or rubber bands (see dotted line) to attach the heat sinks to each side of the assembled Ni-Cds. The sinks will dissipate some of the heat that's generated when you solder the Ni-Cds together. Use a large iron that will make the joint instantly so that you can remove the iron quickly (before heat can enter the cell).

Kim Kangwook, Republic of Singapore



MOTO-TOOL HOLDER

Remove the dust cover from the nose of your Moto-Tool, and then screw on a large nut. To free your hands, just use a vise to hold the nut.

Brad Cobo, Duncanville, TX

Radio Control Car Action will give a one-year subscription (or one-year renewal if you already subscribe) for each idea used in "Pit Tips." Send a rough sketch to Jim Newman, c/o Radio Control Car Action, 251 Danbury Rd. Wilton, CT 06897. BE SURE YOUR NAME AND ADDRESS ARE CLEARLY PRINTED ON EACH SKETCH, PHOTO AND NOTE YOU SUBMIT. Because of the number of ideas we receive, we cannot acknowledge each one, nor can we return unused material.

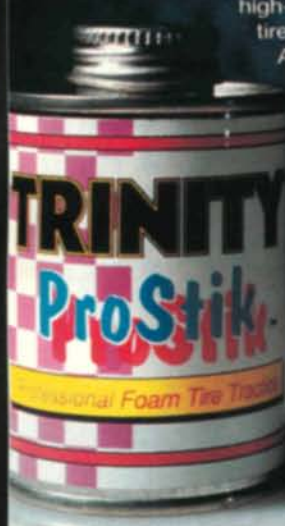


INSIDE SCOOP

by CHRIS CHIANELLI

IN SEARCH OF GLORY AND THE GOODIES THAT WILL HELP YOU GET IT!

Uncle Ernie's Clock Goes **STIK STOCK**



Trinity's Pro Stik is specifically designed for high-traction, long-wearing tires, e.g., black dots and Associated's Goggles, that contain a lot of natural rubber. Older foam compounds, such as green and yellow dots, also benefit from Pro Stik. This slow-drying conditioning and cleaning agent can last through an 8-minute heat. Joel "Magic" Johnson used it when he won the 1/10- and 1/12-scale ROAR On-Road Nationals.

Speedworks' latest stock motor conforms to all ROAR '91 specifications. The Green Machine features 4.9 wet magnets, a full armature (non-slotted), less wire (64 inches) for higher rpm, 27-turns of high-temperature 22AWG wire and high-performance brushes and springs.



The top seven places! After three tries without any success, that's what Kyosho finally accomplished in Germany at the '92 1/8-scale World Championships in July with the Kyosho Inferno—in front of 3,000 spectators during the Saturday finals. No less than eight of the the top 10 slots were occupied by Kyosho Infernos (the other



two were Mugens). The 1st- and 2nd-place cars, driven by Kokushi Toge and Kazushige Yoshida (respectively), were powered by O.S. .21 RX B engines.

We'll have an in-depth report soon to give you more details on this tremendous Kyosho victory. Congratulations Kyosho, you finally did it! Rumor has it that Mr. Suzuki, president of Kyosho, bought drinks for the entire town of Usingen.

GET THE BLITZ! KYOSHO!

Custom painter extraordinaire Greg Booker, known throughout the industry for his prowess with an airbrush, has entered an exclusive agreement with A&L to supply beautifully finished bodies. The designs and colors on these bodies, referred to as the "Color Fantasies" series, will vary at the whim of the artist. All A&L bodies will be available with custom paint work. For more information, contact A&L Mfg., P.O. Box 2115, Corona, CA 91718; (714) 735-5249.



LOOK SHARP!

KICK BUTT!

Presidential Visionaries

During the ribbon-cutting ceremony for the July opening of Tamiya America in Aliso Viejo, CA, shachos (Japanese for "president" or "top man") Mr. S. Tamiya, of Tamiya Inc., and Louis DeFrancesco Jr., of Air Age Publishing, posed for photos. Rest assured, a company like Tamiya Inc. does nothing without a master plan—especially something on the scale of the multimillion dollar Tamiya America venture. Shacho DeFrancesco learned of unprecedented commitment to growth on the part of Tamiya America. Not only does Tamiya America have plans to promote R/C on a grand scale by setting up elaborate race demonstrations in malls throughout the U.S., but a national TV ad campaign is also in the works! Louis also saw (as I did when I was in Japan) more evidence that Tamiya is working hard on racing prototypes.



Ribbon-cutting honors went to both S. Tamiya and Tamiya America President M. Tamiya. In the early days, it was Tamiya Inc. that spearheaded the R/C car boom. Its full presence here can only positively affect the future of our hobby.

No, this recently obtained spy shot is *not* of a Super TRX-1 LS, RX, GTO, Pro-Team car. It's a yet-unnamed, less-expensive version of the highly successful graphite TRX-1.

And how does Traxxas keep the price down? No graphite. Who needs it anyway? Associated-sponsored racers still use the aluminum tub, and Losi team racers have moved to high-tech, low-cost plastic chassis. I'll bet that you'll get all the stiffness you'll ever need from the dual-plane fiberglass chassis that this car has. I'm told that the new car will have most, if not all, of the components that make the TRX-1 so super.

And the price is right! Remember, like so many other exclusive scoops, you heard it here first!



**NEW
TRAXXAS
SPY
SHOT**

ZIP PAK™

Professional Power for Pennies...



It has been said the human hand is better than a computer at assembling battery packs. Don't believe it! Computers don't have bad days. They don't break up with their girlfriends and they don't have headaches. People do. That's why they don't always do the same job the same way twice. They're only human.

That's why Trinity uses an exclusive, computer-controlled, automated assembly system for their Zip Pak. Reliability and consistency are programmed in and never vary.

This automation is combined with the very finest materials. The cells are Sanyo KR1300SC (1300mAh) and there has never been a world champion that didn't run Sanyos. They've never lost! All tabs are pure nickel and as short as possible to minimize resistance. Each is double welded, and all wires are pure copper with silicon insulation. The entire assembly is pressed into a precision fitted tube which protects it from the rough and tumble world of racing.

As the bare, assembled pack nears completion, it is connected to an instrumented quality control panel which measures all facets of the pack's performance. Only then is the Zip Pak label applied.

The result is the lowest cost, highest quality sport pack available.

Buy several as back-up spares. Never be short of power.

TRINITY

Trinity Products Inc

1901 E. Linden Ave, #8, Linden, NJ 07036 • (908) 862-1705 • Fax 862-6875

© Trinity Products, Inc. 1992

DEUTSCHLAND DAYTONA

Europe has its own version of stock-car racing, and the Mercedes-Benz 190E Evolution II AMG was the 1991 German Touring Car champion. Tamiya's 1/10-scale 190E uses the Celica GT-Four chassis and gives easy access to the front and rear gearboxes

through bottom hatches. The Benz also comes with new semi-pneumatic rubber-like racing slicks on one-piece molded wheels. A metallic-plated front grill, polycarbonate rear spoiler, mirrors and cockpit set are included for a high degree of scale appeal.



join the CLUB

Respected for its strong race presence in Europe and in the U.S., Schumacher has incorporated years of racing experience into two very reasonably priced off-landers—the Club 10 Cougar and Club 10 Storm. Both cars feature light-weight alloy chassis, red-anodized alloy shocks,

Kevlar belt-drive transmissions, sealed ball differentials, 48-pitch whisper gears and telescopic drive-shafts. Thank you Cecil, we need more of this!



Winning by Design

• The TRINITY Championship Series™ •

Trinity's Championship series of motors is well named. The 1991 record books clearly show the Championship Series has been the hands down winner in all types of modified racing.

1991 NORRCA 4wd Dirt Oval.....	National Champion
1991 ROAR 1/10th On-Road.....	National Champion
1991 ROAR 2wd Dirt Oval.....	National Champion
1991 ROAR 2wd Off-Road.....	National Champion
1991 ROAR Monster Truck.....	National Champion
1991 Cleveland Indoor.....	National Champion

Championship motors are fast and are the first specifically designed to use Sanyo's new 1700SCRC and Panasonic's P170 SCR batteries.



RC1700	Nuclear Meltdown™	(9T, Dbl)	\$80
RC1777	Kevin, Kevin™	(10T, Trpl)	\$80
RC1778	Helter Skelter™	(11T, Quad)	\$80
RC1779	Speed Metal™	(12T, Trpl)	\$80
RC1780	Flash Point™	(13T, Sngl)	\$80
RC1781	Buzz Saw™	(14T, Dbl)	\$80
RC1782	Armageddon™	(15T, Quad)	\$80
RC1783	The Classic™	(16T, Quint)	\$80
RC1708	Joel Magic Johnson®	(17T, Trpl)	\$80

TRINITY

Trinity Products, Inc., 1901 E. Linden Ave. #8
Linden, NJ 07036 • (908) 862-1705 • FAX 862-6875

© Trinity Products, Inc., 1992

READERS' RIDES

"Readers' Rides" is our way of recognizing the unique, innovative—and sometimes bizarre!—vehicles that our readers have created. Send us a sharp, uncluttered, well-exposed color photo of your car or truck (no Polaroids, please!), along with a brief description, to Readers' Rides, R/C Car Action, 251 Danbury Rd., Wilton, CT 06897. If the Ayatollah chooses your photo, you'll receive a one-year subscription to Car Action, or an extension of your existing subscription. You'll also be eligible for the fourth annual "Reader's Ride of the Year Contest" in the fall of 1993. Write your address and phone number on your letter and on the back of each photo you send, in case we need to contact you.



TEAM CAR CREATION

From West Vancouver, B.C., Canada, comes this photo of Jared Hupalo's RC10 Team Car. Jared has equipped it with a Trinity Slot Machine motor, Trinity batteries, a Novak 410-M5

speed controller, Tecnacraft titanium turnbuckles, MIP Zero-Maintenance ball-bearing steering and an Airtronics XL2P radio system. A friend gave Jared's car the final touch—a cool airbrushed paint job.

.....

SUDDEN IMPACT

Rob Adelaar of the Netherlands is the proud owner of this car—a Serpent Impact with a BMW M3 body. The decals are from Tamiya; they're the same ones that are used on the 1/10-scale Mazda 787B, which is a model of the full-size car that won LeMans last year.



.....



ALL IN THE FAMILY

Valerie Ford of Pompano Beach, FL, and her husband Greg rebuilt a Tamiya Subaru Brat that they've had since 1984. Valerie's Brat now has a Blackfoot front end and tires, Trinity rims, Thorp rear axles and a two-tone paint scheme. The Fords seem to embrace the motto, "The family that plays together stays together"; the Brat is just one of several R/C cars that they own.



YOKOMOMENTOUS

Jim Tiemann of Dundee, IL, is a diehard Yokomo driver. He equipped his YZ-10 with Andy's A-arms, Associated and Losi shocks, Tecnacraft titanium links, a Novak receiver, a Tekin speed controller and a Revtech 14-turn motor. (He has also scratch-built many other mods.) Jim says that he and his trick Yokomo tend to win every race they enter.

• • • • •

HE'LL BE BACK

Chris Corpening of Severn, MD, knew that the expenses of college would force him to abandon R/C temporarily, so he decided that he'd go out in a "blaze of glory." He started his final project off with a Bolink Eliminator Sport chassis, a Parma Cobra body and a Hemi motor. He then added headlights, a cotton-fabric-covered top, a hand-stitched Cobra Electronics symbol and a full set of Pro-Line tires and wheels. To make his Cobra perform like the full-size one, Chris added a Monster Mash motor with a 6:1 gear ratio. He says that every time he takes it out, someone wants to get into the hobby! Chris's subscription will keep him up on all of the latest R/C goodies during his hobby hiatus.



DON'T GET CAUGHT WITH YOUR AMPS DOWN!



1003

AIRCRAFT

Electronic On/Off, BEC
Brake For Folding Prop.
Auto-Cut-Off
6-12 Volt (5 To 10 Cell)
1.55 Oz., 1.77 x 1.06 x 0.83"



1800 SERIES

1801N- AIRCRAFT

Switchable BEC
1-Way, Auto Cut-Off
6-8.4 Volt (5 To 7 Cell)
720A Max Current
1.27 Oz., 0.82 x 1.65 x 0.67"

1802N/1802 DL- SURFACE

1-Way, Brake, Switchable BEC
6-8.4 Volt (5 To 7 Cell) BEC On
6-15 Volt (5 To 10 Cell) BEC Off
N-600A/DL-900A, Max Current
1.37 Oz., 0.99 x 1.9 x 0.85"



520

SURFACE

2-Way, Brake, BEC, TEMP FET
120A Fwd., 60A Rev.
360A Max Current
LED's For Neutral & Reverse
6-8.4 Volt (5 To 7 Cell)
2.54 Oz., 1.57 x 1.81 x 0.79"

Hitec's electronic speed controls keep the power pumping, run after run, flight after flight. From the novice to expert alike, Hitec offers one of the most extensive lines of speed controls to match your latest project.

**GET YOUR JOLTS
AT YOUR DEALER!**

hitec™

9419 Abraham Way
Santee, CA 92071
(619) 449-1112 FAX 449-1002



1500

2-Way, Brake, BEC
LED Indicator For Reverse & Brake
6-8.4 Volt (5 To 7 Cell)
400A Max Current
2.73 Oz., 2.44 x 1.34 x 0.98"

Distributed in Canada by
Hobbycraft Canada
(416) 738-6556 FAX 738-6329

TROUBLESHOOTING

by FRANK MASI

If you have a technical problem that your hobby shop or racing friends can't resolve, give us a shout at Radio Control Car Action, and we'll see if we can chase down an answer for you. Questions should be of a technical nature and should be addressed to Troubleshooting, Radio Control Car Action, 251 Danbury Road, Wilton, CT 06897. We regret that, owing to the tremendous amount of letters we receive, we can't respond to every one.

TRANNNY TROUBLES

I'm frustrated with my RC10 CE. I bought it a few weeks ago and put it together just as the manual said. The first time I ran it, the tranny was pretty smooth, but it was loud, so I figured that it should be that way. It got louder, so I took it apart completely and cleaned and lubed every part that needed it. Right after I put it back together, it ran more quietly, but then it got louder and louder. Also, one side of the transmission was tighter than the other so it transferred the motor's power to one wheel. I've taken it apart four times now, and I really don't know what to do. I run a stock motor. I hope to invest in a Stealth tranny soon, but I want to find out what's wrong with this one.

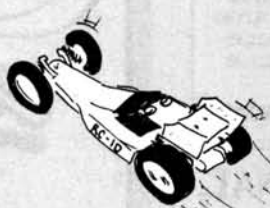
Andrew Karpa
Blacksburg, VA

Your tranny is relatively primitive by today's standards, but it's still capable of race-winning performance. The secret is in how it's built. It sounds as if there's a problem with the idler and outrdrive gears. The mesh between these gears is critical; to reduce friction, they must be spaced perfectly.

Using a small file, slightly enlarge the outrdrive gear's shaft hole in its aluminum spline. This will enable you to adjust the gear mesh for low fric-

tion. The idler and outrdrive gears should spin freely after you've reassembled them (the rest of the tranny is a piece of cake). If they don't, remove the bearings (or bushings) from each gear, clean them carefully and lubricate them lightly. Also, check the instructions to be sure that you've correctly assembled the transmission's top shaft. If the top gears aren't aligned with the idler gears, then the transmission will bind also. Build the top shaft carefully, and pay close attention to the spacing between the press-on pinion gear and the tapered shaft.

The best modification you could make to the original RC10 tranny is to add a Jammin' Products RC10 Diff Kit. It replaces many of the original diff components with updated, high-quality parts that make the diff action as smooth as that of any of today's sophisticated ball diffs.



BLACKTOP BLUES

I own a Lynx II Elite, and I plan to race it on a concrete banked oval. I've practiced driving on the post office blacktop parking lot, but whenever I pull the trigger—even slightly—or go around a corner, the car spins out.

Jeremy Raczkowski
Grovertown, IN

The conditions you'll encounter on a concrete track will be vastly different from those you've experienced at the parking lot. I'll try to help you correct the oversteering (spinning-out) problem by dialing-in your car for a concrete bank-oval track—not a blacktop parking lot.

Most racers use rubber-capped tires on concrete; they last longer than foams, and they make the car faster. To prevent oversteer, use a harder inside front tire. If the problem still occurs, use a harder tire on the outside front, too. You can also try stiffer front springs, or you can "soften" the rear suspension to increase the rear tires' bite. (Use a lighter shock oil and spring, or loosen the rear sway bar.) It's best to make one change at a time, so you'll know which mod worked and which one didn't.

GREASE IS THE WORD

I've been racing for some time now, and have a dirt off-road course in my backyard. I never had to work with a ball diff until I got my Team Losi Junior Two. I used stock grease for a while, but I either used too much, or I put the diff together incorrectly, because it stuck. (If I spun one wheel, I could get it to work and, if I spun it just a little faster with one hand, I could get the motor to spin!) I took the diff apart, but it was fine. I decided that the grease was too thick, so I tried Tamiya molybdenum grease and a little stock Losi grease. The diff worked well until I took the car outside to adjust (it slipped for about 4 feet.) I tightened the diff until it only slipped about 1 foot, but it still didn't operate smoothly. I also tried replacing the diff balls, but that didn't help either. I'd appreciate any advice you can offer; the guy at my local hobby shop doesn't know anything, and he isn't very nice.

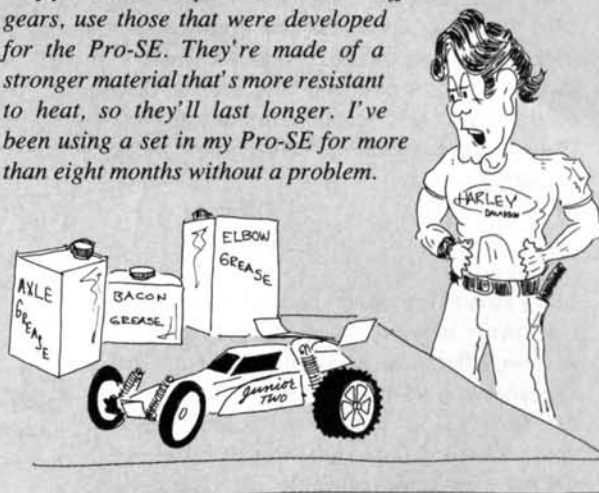
Brian Jonas
Germantown, NY

For a car to perform well, its diff must operate as smoothly and as freely as possible. Excessive drag in the diff will ruin the car's cornering capabilities.

You were probably on target when you guessed that the grease was too thick, and that you may have used too much of it when you built the diff. You also did the right thing when you disassembled the diff and rebuilt it with thinner grease. My only concern is that the diff was damaged when

you ran it while it slipped. The heat buildup that's caused by such a problem can distort the molded diff gears and cause the diff balls to develop flat spots, in which case they have to be replaced (as you've already done). The diff rings (or washers) may also have been damaged, and you may have to replace these as well. You should check that you've installed the correct number of balls in the thrust bearing and that you've used the proper type of grease. (Associated's Black Grease works very well.)

If you need to replace the molded diff gears, use those that were developed for the Pro-SE. They're made of a stronger material that's more resistant to heat, so they'll last longer. I've been using a set in my Pro-SE for more than eight months without a problem.



T MINUS 4 MINUTES

I own a Team Losi LX-T truck, and I use a Fantom stock motor. My 6-cell battery can't last through a 4-minute race. One guy at my track uses a 6-cell pack in his RC10T, and his pack can last a whole 4 minutes. I have a Pro-Tech AC/DC supercharger (model 702), and I mainly charge off car batteries for 15 minutes. I also discharge my pack completely.

Matthew Hudgins
Cumming, GA

Which type of battery does the guy with the RC10T use? Is it the same type as yours? There are many types of cells (SC, SCR, SCE, 1200mAh, 1400mAh, 1700mAh). Each performs differently, and you have to gear your motor to each. A 1200mAh cell has a lower capacity than a 1400 or 1700mAh cell, so you'd have to alter the gear ratio to attain comparable run times with it.

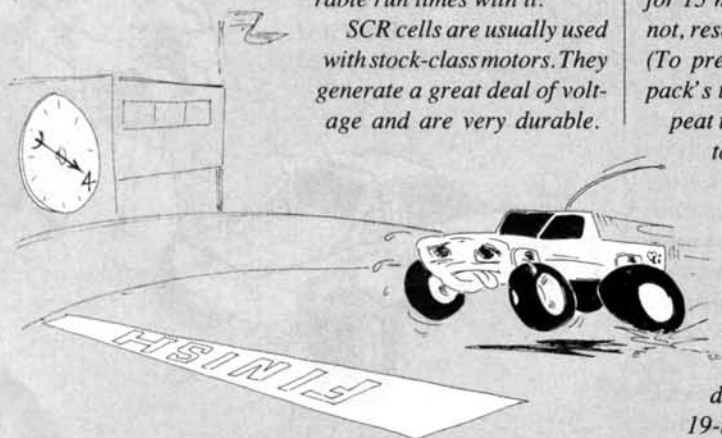
SCR cells are usually used with stock-class motors. They generate a great deal of voltage and are very durable.

They can also withstand a lot of heat and are less likely to be damaged if they're overcharged. In addition, you can use them repeatedly throughout the day, so you don't need more than one pack. Although 1400mAh SCR batteries have been around for a few years, many people have found that the new 1700mAh SCR packs offered by Panasonic and Sanyo work very well.

The Pro-Tech charger is a high-quality unit and should be adequate for your needs. I recommend that you use a voltmeter during the charging cycle to detect the pack's voltage peak so that you'll know when it's fully charged. The 15-minute timer will prevent you from accidentally overcharging your battery, but it won't ensure that your pack is getting the optimum charge.

You can also use the "thermal method" to determine whether your pack has been fully charged. Charge the pack for 15 minutes; if it's warm afterward, it's fully charged. If not, reset the timer to about 5 minutes and resume charging. (To prevent overcharging, it's vital that you monitor the pack's temperature constantly while you're doing this.) Repeat this procedure until it the pack is slightly warm to the touch.

Although many factors (the track, battery/motor combo, driving skills, etc.) affect how you should gear your car, Team Losi offers a good set of guidelines: with a '91 ROAR-legal stock motor (24 degrees of timing, maximum), start with a 90-tooth spur gear and a 20- or 21-tooth pinion gear. With an outlaw stock motor (more than 24 degrees of timing), use a 90-tooth spur and an 18- or 19-tooth pinion.

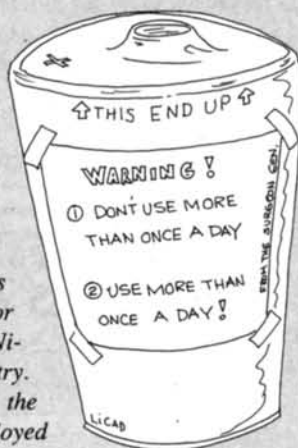


CONFLICTING LABELS

I recently bought an unmatched Trinity P-170 6-cell SCR battery pack. On the back of its package, there's a piece of paper that says things such as "The more you use these cells, the better it gets." There's also a piece of cardboard that says things such as "For maximum performance, do not use more than once a day." It also says, "Between charges, pack should be stored on 30-ohm resistor," but the man at my hobby store said that I shouldn't leave the pack dumped when it's being stored. He also said that, unlike an SCE pack, I could use this pack more than once a day, which (along with the warning on the cardboard box) contradicts the first warning I mentioned. These things have left me baffled. Can you help?

Greg Li
Stow, MA

Every battery-matching company's goal is to extract more out of the Ni-Cd cell than its competitors do. This has caused the appearance of what we jokingly refer to as the "battery secret of the week." Believe it or not, much of what has been learned about Ni-Cd batteries comes from the R/C industry. We've used the cells in new ways, and the matching/cycling techniques we've employed



have helped manufacturers to improve these batteries.

The instructions that come with batteries are general care/maintenance guidelines. "The more you use these cells, the better they get," means that each cell's performance will improve the more you cycle it, i.e., charge it, and then discharge it completely. You can use the pack more than once a day if you follow the proper procedures. Fully discharge it after a run and let it cool to room temperature without using ice or other artificial means. Then, just recharge it. In most instances, the pack's voltage will be slightly higher (and its overall capacity slightly lower), than the previous charge cycle.

I usually store my battery packs connected to a 30-ohm resistor, but never for more than a week. With the resistor setup, each cell is discharged gradually, and this helps to erase "memory" and improves the pack's ability to take a charge. A weak/bad cell could prevent the others from being fully discharged, so many racers now use cell-equalization devices. Trinity makes an equalizer board that has separate resistors so that each cell is discharged individually. Although I don't have the details on Max-Cell's clip-on battery conditioner, it's also supposed to equalize cells.

STEALTH SWITCH

Hey, people, what's up?! I want to know whether I can put an Associated Stealth tranny on my Traxxas Blue Eagle LS. Also, can I use a Mr. J 12-turn quad with my original tranny? If the Stealth fits, can I use it, or do I have to have an 18- or 20-turn? What's the minimum number of turns I can use on a truck? One more thing: I'm having trouble getting my wheels to turn; sometimes the servo tape comes undone, and other times my Futaba S-132H servo doesn't have enough torque to turn them. Please help!

Jeff Battiste
Bartlesville, OK

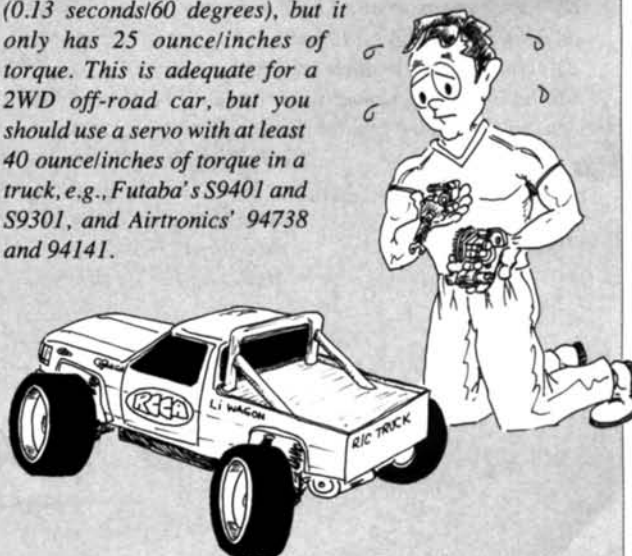
Hey, Jeff, what's up yourself?! I feel the need to say this: there's nothing wrong with the Blue Eagle's tranny! Leave it in! Whew! That was liberating. If you have a deep desire to use the Stealth tranny, go ahead, but it isn't necessary for performance or durability.

The Blue Eagle LS's tranny is actually stronger than that of the Blue Eagle, and it should be able to handle any motor. A 12-turn motor is a little severe for trucks—I prefer those in the 15- to 18-turn range—but it's usable. When you use a hot modified motor, be sure that it isn't over-gear. Start with the smallest pinion gear you have, and work your way up until the battery dumps at about 4 to 4 1/2 minutes, then back off one tooth in gear size. Also, always monitor the temperature of your battery pack; too much heat can damage the cells.

The most secure way to mount a steering servo is to use rigid mounting posts. Easy-to-use posts are available from

Traxxas, Kyosho and Associated, among others. The next best method is to use servo tape; it isn't as rigid as posts, but it can be nearly as effective if it's used correctly. Wipe the servo and the chassis with motor spray or a similar solvent, and then carefully apply tape to the entire side of the servo; just be sure that it doesn't extend past the servo case. Center the servo's travel, attach the servo-saver and the linkage, then position the servo and stick it to the chassis.

Futaba's S-132H is a quick servo (0.13 seconds/60 degrees), but it only has 25 ounce/inches of torque. This is adequate for a 2WD off-road car, but you should use a servo with at least 40 ounce/inches of torque in a truck, e.g., Futaba's S9401 and S9301, and Airtronics' 94738 and 94141.



by FRANK MASI

CUSTOM WORKS

Enforcer

THE KIT

The Enforcer kit includes everything you'll need to tackle a dirt oval except radio gear, a motor and batteries. A well-written, seven-page instruction manual is included, as is an array of instructional supplements (one is a very useful tuning guide that will help you to "dial-in" your car to a particular track).

Go



ATTEND A DIRT OVAL race, and you're guaranteed to see more than a few Custom Works* cars. Since the company's inception, it has virtually dominated the oval racing scene, first with the radical 4WD Dominator, then with the 2WD Intimidator. In fact, the competition is just now beginning to make a dent in Custom Works' long-standing reign as the king of dirt-oval racing.

Sprint-car racing has long been a favorite of dirt-oval fans. The sprinters' realism and detail, and their "tail-out" cornering, make them fun and exciting, even for spectators! This has created a demand for purpose-built sprint cars; previously, racers had to piece together their own sprinters using after-market parts.

Recognizing this need, Custom Works has released its Enforcer sprint car—a race-ready sprinter that comes with such competition goodies as a ball diff, turnbuckle tie-rods and a graphite chassis.

The Enforcer is based on the Intimidator, but it also has many unique features that improve performance and scale appearance—qualities of equal importance to sprint-car enthusiasts.

the roll cage, and, to prevent the screw heads from snagging on the ground and slowing the car, all the holes on the underside of the chassis have been countersunk. Custom Works recommends

ahead, make my day!

The Enforcer's high-quality, graphite chassis is extremely rigid and should resist both side-to-side and front-to-back stress. The chassis has been drilled to accept the suspension components and

that you sand the edges of the chassis lightly before you start to build. I agree. Take it from me, graphite splinters hurt like a mutha!

Enforcer

RACK 'EM UP

Instead of traditional steering bellcranks, the Enforcer uses a sliding-rack system. The molded-nylon rack's base is attached to the chassis, and the steering linkage is attached to the rack's arm. The rack is connected to the steering servo, and it slides easily through the base, allowing smooth, slop-free steering.

The Enforcer's independent front suspension is made up of a pair of molded-nylon A-arms that are attached to two machined-aluminum mounts. When they're bolted to the chassis, the mounts cant the arms downward, yielding a kick-up angle of approximately 15 degrees. An aluminum tube connects the two mounts and strengthens the assembly.

Molded caster blocks are attached to the outer ends of the arms. The kit's blocks tilt rearward 10 degrees, so when they're attached to the A-arms, the car has 25 degrees of positive caster. Custom Works offers a variety of blocks that allow caster adjustment between 5 degrees and 25 degrees, in 5-degree increments.

In-line steering blocks are affixed to the caster blocks. Before you insert the axles into the steering blocks, be sure that the holes in the axles line up perfectly with the kingpin holes in the caster blocks.

The Enforcer's rear A-arms are identical to those on the front. They're attached to machined-aluminum mounts that also act as brackets that support the Enforcer's fully adjustable ball diff.

The diff assembly is a Du-Mor* R/C Star Force spur gear that's sandwiched between two machined, hardened-steel diff hubs. The left hub contains the thrust bearing, which is completely covered (and protected from dirt and debris) by a steel cap that's bolted to the hub. The kit includes a small amount of Cheetah Racing's* Super Diff Lube. Use it sparingly. Apply just enough to each ball to give it a thin coat; don't "glob" it into the diff-ball holes in the spur gear, because this will impede the diff's action.

An outdrive is attached to each side of the diff with setscrews. Apply a small amount of mild thread-locking compound to each setscrew. Traditional dogbones transfer the power from the diff to the rear axles. It's especially important to make sure that you've installed the small rubber O-rings in each diff outdrive and inside each rear axle before you insert the dogbones. The O-rings prevent the dogbones from falling out.

BORE AND STROKE

Because most dirt-oval cars are designed to run on smooth surfaces, the large-volume shocks of off-road cars are overkill; they also add weight to the car, and lightness is the name of the game when it comes to quick acceleration.

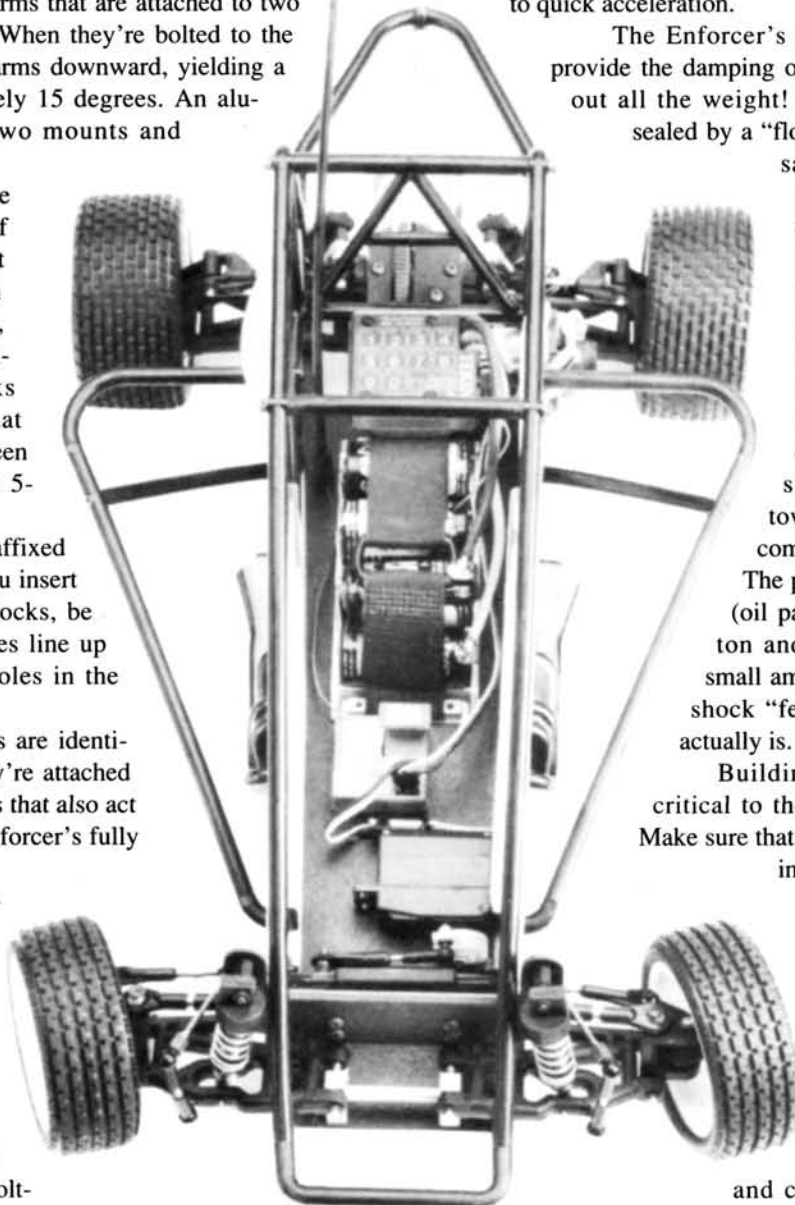
The Enforcer's small, pressurized shocks provide the damping of much larger shocks without all the weight! Basically, the shocks are sealed by a "floating" O-ring that compensates for the oil that's displaced when the shock is compressed. A spring between the O-ring seal and the shock's cylinder nut provides rebound force after the shock has been compressed. When the shock is compressed, the oil that's displaced by the shaft pushes the O-ring towards the cylinder nut and compresses the pressure spring. The piston has very little valving (oil passes only between the piston and the shock body), so the small amount of oil that's inside the shock "feels" much heavier than it actually is.

Building the shocks properly is critical to the Enforcer's performance. Make sure that the damping of both shocks in a pair is exactly equal, i.e., that the front left shock is equal to the front right, and the rear left is equal to the rear right. Special instructions are included with the shocks to help you avoid assembly problems. The more time

and care you take to build the shocks, the better they'll work. It's important to remove any flashing or burrs from the shock components. Examine them carefully before you start, and sand them *lightly*—don't alter their size!

ROCKIN' THE CRADLE

The Enforcer's battery-mounting system uses neat, polycarbonate "cradles" that are screwed on to the chassis. Velcro® straps secure the cells to the cradles. You can paint the cradles from the inside, as you would a body. The kit comes with two molded cradles; one is designed to accommodate seven cells (four on the bottom, three on top); the other will hold six cells.

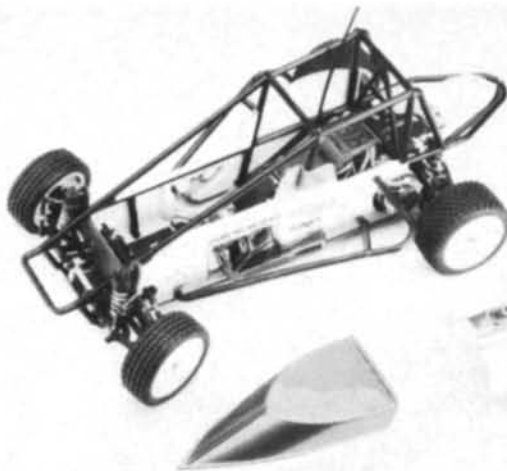


ENFORCER

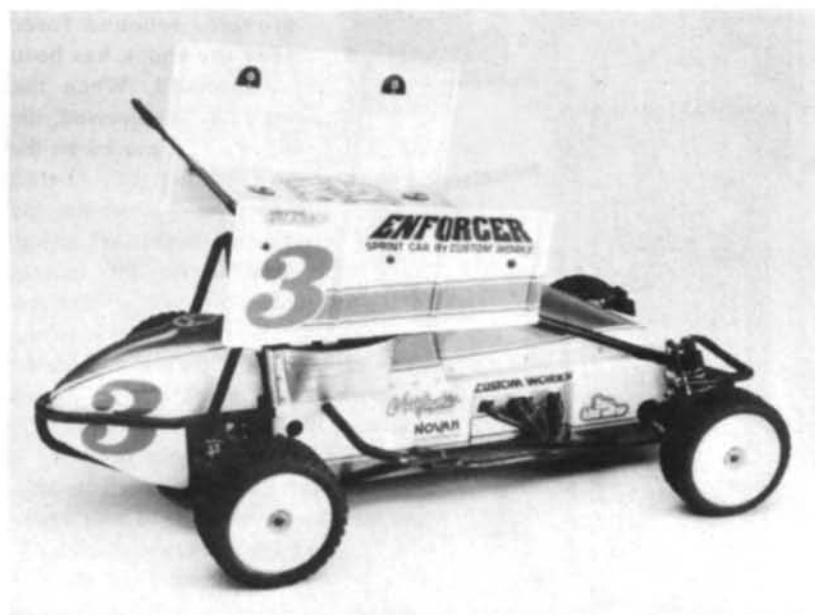
CAGE MATCH!

OK: until this point, I've been building a 2WD dirt-oval car. But the Enforcer is a sprint car, and this means roll cages and wings and cool tires and side dams and...well, you get the picture. This is where the Enforcer starts to *look* like a sprint car.

The Enforcer's nylon roll cage envelops the chassis and protects it during severe collisions. It's made of several sections that can be bolted together with special turnbuckles and Allen-head bolts. The completed assembly is then mounted securely on the graphite chassis. Attaching the cage can be fairly difficult—and, though the text is clear and detailed, the manual's photos aren't detailed enough to help much during this step. Read the text carefully and follow the directions



The Enforcer's body is sectional. The side pieces are bolted to the chassis; the hood and rear cover are attached with Velcro® so they can be removed easily.



The Enforcer is a unique blend of scale good looks and race-winning performance. The realistic treaded tires are standard, and they work well on most surfaces.

step by step, and you'll be fine. You can dye the cage with fabric dye, or a nylon dye such as Litespeed's* Dylan.

The Enforcer's sectional, Lexan body is held together with Velcro® strips. The two side sections feature trick, molded-in headers. The tail and hood provide additional protection from the elements, and they really make this car look hot! It's a little tricky at first to align and install the body panels properly, but fear not; it gets easier every time you do it. The kit's crowning glory is the highly detailed Lexan wing. This aerodynamic assembly has molded-in reinforcement ribs. The wing is mounted on top of the roll cage and is fully adjustable, so you can alter the car's handling characteristics.

FEEL LUCKY, PUNK?

To run the Enforcer, I chose two of Tekin's* newest products—the 410K electronic speed controller and the TFM-27 FM micro receiver. Against my better judgment (and the advice given in the

instructions), I installed a Trinity* Speed Metal 12-turn triple-wind motor. The last thing I want when I test a new car is too much speed (because you can't tell if the car is handling correctly), but I wanted to do some serious power slides; that's what sprinters are for! Speed is useless if the car dumps before the 4-minute mark, so

I chose a set of Trinity's Pushed Team Sanyo 1700mAh SCR cells (seven of 'em).

DIRTY HARRY—1, STREET SCUM—0

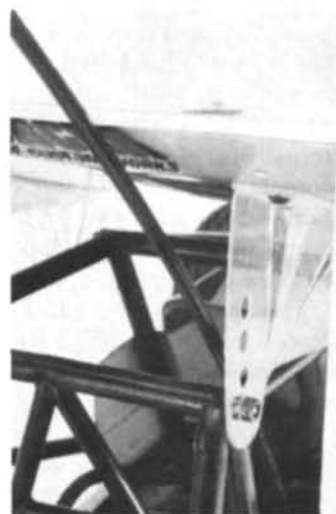
I'm lucky enough to live close to an indoor, dirt-oval facility. A&D's Fastracks in Brewster, NY, has been catering to dirt-oval enthusiasts for almost five years. They've just added an outdoor oval as well, and I couldn't wait to do some hot laps.

The Enforcer was a blast to drive. Sprinters are the only cars designed to be driven with their tails "hanging out" in the turns—just the way I like to drive! I built the shocks with 20WT Associated* oil, but the car seemed to transfer its weight too quickly to the outside wheels when I entered the turns, so I changed to 30WT all around, and this seemed to help.

I noticed that the Enforcer was oversteering slightly when it entered turns, so I installed the optional front sway bar kit (part no. 4222). It helps to keep the inside rear tire in contact with the track, and this reduces steering slightly. This was the ticket; the car was more stable when it entered

and exited turns.

When the Enforcer was "dialed," I put in a fresh battery pack and went back out. Although there wasn't a race going on, I was really into driving this thing! I don't know if it's the countersteering or what, but I think sprint cars are addictive. The semi-pneumatic, scale, treaded tires really do their thing. Without them, the Enforcer would probably handle like any other dirt-oval car, but with them, it's power-slide city!



The highly detailed wing can be adjusted to several positions to alter its handling effects. Wing angle can be changed by raising or lowering the rear mount.



Small, pressurized shocks at all four corners help to keep the Enforcer glued to the track. An optional sway bar was used up front to limit oversteer.

IT'LL TAKE YOUR HEAD CLEAN OFF...

Purpose-built, dirt-oval cars are a little pricey (\$489 for the Enforcer), but you get a lot of fun for your money. The kit's quality is excellent; the parts fit together without fuss, and the machined-aluminum parts are finished beautifully. The instructions are well-written, but some of the assembly steps could be illustrated more clearly. Overall, the text is excellent and the supplements (especially the one on tuning) are very helpful.

The completed Enforcer looks awesome. The wing is the most detailed that I've ever seen, and the body panels, roll cage and treaded tires make this one of the most realistic kits around. Because it's based on the Intimidator, the Enforcer scores high marks for performance, too. The fully independent suspension works well on smooth to slightly bumpy tracks. Take your time, and you'll get the hang of tuning the pressurized shocks.

All in all, the Enforcer is a high-quality kit that offers a lot to dirt-oval enthusiasts. The asking price is a little high, but you won't be disappointed if you drop the coin to get one. Tail-out sprint-car action awaits!

**Here are the addresses of the companies mentioned in this article:*

Custom Works R/C Products, 3720 Easton Dr., Ste. 7, Bakersfield, CA 93309.

Du-Mor R/C Inc., 1002 Union Landing Rd., Cinnaminson, NJ 08077.

Cheetah Racing, 10823 Amestoy Ave., Granada Hills, CA 91344.

Litespeed, P.O. Box 4765, Spokane, WA 99202.

Tekin Electronics, 970 Calle Negocio, San Clemente, CA 92672.

Trinity Products Inc., 1901 E. Linden Ave. #8, Linden, NJ 07036.

Associated Electrics Inc., 3585 Cadillac Ave., Costa Mesa, CA 92626.

Airtronics Inc., 11 Aultry, Irvine, CA 92718.

Futaba Corp. of America, 4 Studebaker, Irvine, CA 92718.

Robinson Racing Products, 165 N. Malena Dr., Orange, CA 92669.

TOP GUN

Radio-Controlled Products

P-170 & Sanyo 1700 Call!

DIFF. LUBE...U.S.D.A. H-1 RATED...THE ONLY LUBE...3.95

We Meet Your Need For Speed!

7127 E. Becker Ln. #3, Scottsdale, AZ 85254

(602) 391-1676 (10-5 Pacific) DEALERS INVITED

Sanyo 1400 SCR

Sport Packs...\$29.95

280-284.....\$30.00+

285-289.....\$39.00+

290-294.....\$48.00+

295-299.....\$54.00+

300+ -- when avail.

DO YOU HAVE THE NEED FOR SPEED??

NEW!



ALLIGATOR DESIGNS

P.O. Box 68838

Schaumburg, IL 60168-0838

(708) 351-3869

NOW the Dual Power Kit allows you to mount 2 motors to your RC10 or RC10T. The kit includes complete instructions and a precision crafted light-weight aluminum motormount.

"This kit with added cells made my RC10T fly" - S.F., IL

"It really works...Awesome" - G.P., FL

DON'T DELAY - ORDER TODAY!

For orders only call 708-351-3869 or send \$19.95 check or M.O. + \$3 S & H (IL res add 7.5% tax) to: Alligator Designs, P.O. Box 68838, Schaumburg, IL 60168-0838

Please RUSH a DUAL POWER KIT to:

Name: _____

Address: _____

City, St.: _____

Zip: _____ Phone: _____

STAGE III

"THE ULTIMATE CELL TEST"

Introducing Stage III Platinum Racing Cells and Assembled SpeedPaks

SuperSpeed & SuperSpeed Pro Series for On-Road Racing!
Stadium Raider & Stadium Raider Pro Series for Off-Road Racing!
HydroSpeed & HydroSpeed Pro for Electric Boating!

All Stage III Platinum Racing Cells and SpeedPaks are conditioned and matched with our proprietary cycling system. Join the winners who have already discovered Stage III.



Get the Pure Power Value of Stage III Sanyo & Panasonic SCR's Available Nationally---Dealer Inquiries Welcome



SUPER 13



ULTRA BRAID



GEMINI BRUSHES



DRAGGIN' WIRE



CELL SHRINK

STAGE III "The Ultimate Cell Test"

1189 Chicago Road • Troy, MI 48063-4239 • (313) 585-1150 • (313) 978-9085 FAX

PARMA

HEMI 'V

IN THE '50s and early '60s, America was in love with the automobile. The quality and styling of these heavy-metal machines was at an all-time high—as was the pride felt by their owners. The drive-in diner was a sign of the times—a place where the greaser multitudes hung out doing burgers and checking the chicks. The coolest of wheels—and a sure-fire ticket to dating the prom queen—was a souped-up 'Vette. If you really wanted to put the competition in its place, you slid a big hemi V8 complete with blower under the hood. Ah, those were the days: drag racing, 15-cent burgers and 35-cent-a-gallon gas!

by GERRY YARRISH

Neither the Parma* Hemi V8 nor the Parma 'Vette is new, but packaged together, they make a sweet combination. It arrives in a colorful box on which there are good photos of the finished model. Engine details that aren't very clear in the instructions are clearly shown in the photos.



AMERICAN GRAFFITI

ETTE



Inside the box, well-protected in plastic bags, you find five Lexan pieces—the body, a chassis, front and rear bumpers, and an inner hood liner—parts for the front- and rear-end assemblies and the chassis plate. The wheels are of chromed plastic, and the tires are of the standard, indoor, foam variety. The parts count is minimal and so is building time.

REAR END

The hardest part of the project is assembling the rear axle and the ball diff—not that it's particularly difficult, but from here on, everything is *very* easy.

The formed-sheet-aluminum, rear pod holds the axle and the motor. Press the two bronze bushings into their respective holes, and slide the axle through them. The kit contains plastic spacers, and if you want to, you can use them to widen the rear wheel track (use two or three on each side; I followed Parma's recommendation to use two). The spacers on the diff side of the axle are followed by one drive ring, the 48-pitch spur gear (with diff balls inserted), the other drive ring, the right side hub, one steel washer, the thrust washer, and a second steel washer. The Belleville washer goes on next, and it's followed by a nylon 10/32 locknut that holds the

(Continued on page 43)



S P E C I F I C A T I O N S

Manufacturer.....Parma
Type.....Scale street rod
Scale.....1/10
Price.....\$139.95

DIMENSIONS:

Overall length.....17.5 inches
Width.....7.5 inches
Wheelbase.....10.5 inches
Front track.....6.5 inches
Rear track.....8.25 inches

WEIGHT:

Gross (with battery).....2 pounds, 15 ounces

BODY:

Type.....'58 Corvette
Material.....Polycarbonate

CHASSIS:

Type.....Plate
Material.....Fiberglass

DRIVE TRAIN:

Primary.....Pinion/spur
Transmission.....Direct drive
Differential(s).....Ball diff
Bearings/Bushings.....Bronze bushings

SUSPENSION:

Front: Type.....Floating axle
Damping.....Coil spring
Rear: Type.....Solid axle
Damping.....None

WHEELS:

Front: Type.....Chromed one-piece plastic
Dimensions (DxW).....1.75x1.125 inches
Rear: Type.....Chromed one-piece plastic
Dimensions (DxW).....1.75x2 inches

TIRES:

Front/rear.....Foam

ELECTRICS:

Motor.....Not included
Battery.....6-cell stick*

OPTIONS TESTED: Trinity Monster Horsepower stock motor and 1400mAh Sanyo SCR pack; Robinson Racing 15-tooth Titanium Gold 48-pitch pinion; Novak 410-M5 electronic speed controller.

COMMENTS: the Parma Hemi 'Vette is easy to build, and it looks

like a "real" car. With a scale hemi engine under the hood and a killer paint scheme—a real showstopper.

The body comes off easily because it's attached with Velcro®, but to make it easy to switch the radio on and off, install the switch in the hood opening. I didn't install an internal antenna mount; I just couldn't cut a hole in that beautiful body! The model isn't meant to be a competition racer, but it does go fast, and it can spin some pretty impressive donuts! The adjustable slip in the rear end can be fine-tuned to produce exactly the performance you want.

*not included



(Continued from page 39)

entire assembly together. Then attach the right rear wheel to the hub with two 5-40 screws and slide the entire assembly into the bushings.

From the other side, slide two more plastic spacers onto the axle, and follow them with the left side hub and the left wheel. Secure the hub with a 6/32 setscrew, and set it



No, it's not a race car, but the Parma Hemi 'Vette is one of the hottest scale cars I've ever seen. A flat chassis mates to the rear pod, which contains a fully-adjustable ball diff.

so that there's about 1/32 inch of side-to-side play in the assembly. After that, it's all downhill!

FRONT END

The front end is built on a flat front crossbar that holds both kingpins and is then screwed to the flat chassis plate. The spindles are held in place on the kingpins with a suspension spring and an E-clip at the top. Two bronze bushings are pressed into the front wheel, and the wheel is then held on the spindle with a 4/40 locknut. It's very easy to put this 25-part assembly (which includes both wheels and the front end) together.

CHASSIS

To finish this part, you must first trim, drill and paint the Lexan chassis pan. Remove the area between the rear wheel wells to allow the rear pod to pass through. Attach the rear pod, the front body mount, the front crossbar and the rear body mount to the flat chassis plate; then attach the Lexan chassis pan, the battery holder and the antenna mount.

Note that the rear body mount is held on the rear pod with two self-tapping screws that must first be "threaded" into the holes to start the threads. This is the second most difficult part of the project, but you

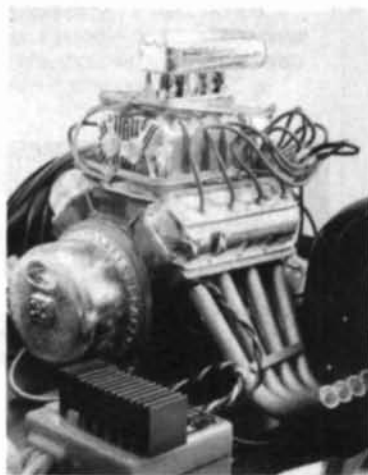
HEMI 'VETTE

don't have to be a brain surgeon to do it.

RADIO INSTALLATION

I use a JR* Propo PCM Alpina wheel radio to control my 'Vette and a JR C3321 miniservo to steer it. The kit doesn't include a servo-saver, but I installed a Tamiya* unit that attaches the front tie rods to the servo. The tie rods are simple, Z-bent wires held together with locking collars. To make everything easier, attach the tie rod to the front wheel first, and then attach the wheel to the spindle. Use servo tape to attach the steering servo to the top of the front body-mount plate.

My speed controller is a Novak* 410 M5, which is excellent, but doesn't have reverse. If you want



The detail of the hemi is mind-boggling! It even has realistic "zoomie" pipes and a realistic blower assembly. I added spark plug wires to further enhance its scale appearance.

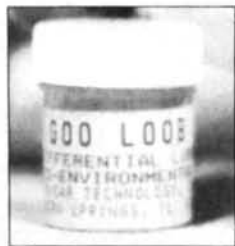
this feature, try the Futaba* MC 210CB speed controller. It's a great unit, and it has a built-in 30A fuse to protect your equipment. I use both in my model; just decide what you really want.

The speed controller and the receiver are both attached to the chassis pan—one on either side—with servo tape, and the drive bat-

PHOTOS BY WALTER SIDAS

AERO-CAR TECHNOLOGY

GREAT NEW PRODUCTS



GOO LOOB AC-0164

A new concept in ball diff lubrication. Adds hours of life to your diff. Ultimate lubricity with the right amount of tack. Build it. Lube it. Set it. Forget it.



CONDUCTA AC-3003

The last word in electric motor maintenance. Cleans, lubes and restores coms and brushes. Reduces amp draw by 25%. Improves current flow.

For more information, contact:

Aero-Car Technology Inc.
P.O. Box 336
Western Springs, IL 60558
(708) 246-9027

TEAM SHADOW RACING

1/10TH SCALE ON ROAD KITS
PRO- STOCK DRAG CARS
FUNNY-CAR DRAG KITS.
GLASS OR GRAPHITE CHASSIS
SLIPPER CLUTCH & 2-SPEED TRANS
ALSO AVAILABLE.
CLEAR BODIES AND COMPLETE
PARTS SUPPLY.

SEND \$2.00 FOR CATALOG

DEALER INQUIRES WELCOME

P.O. BOX 1003
Kaneohe, HI. 96744

HEMI 'VETTE

tery sits just in front of the rear wheel wells. I installed the on/off switch for the BEC controller through the hood opening, so I can switch the car on and off without removing the body. I attached the switch to the hood liner with a small piece of servo tape, but Velcro® would be even better, because you have to remove the switch when you want to take the body off the chassis.

ANTENNA

I made only one modification. I didn't want to drill a hole in the roof of the car, so I didn't use the supplied antenna tube. Instead, I wrapped the antenna around a clear plastic strip that simply bends, out of the way, under the body. Behind the tinted windows, it's hardly noticeable. It would be sin to drill a hole in this beautiful body!

MOTOR

I use a Trinity* Monster Horsepower stock motor and a Robinson Racing* 48-pitch, 15-tooth (Parma recommends 14 teeth) Titanium Gold pinion gear to mate with the spur. Two motor-mounting screws come with the kit, but I found that to mount the motor properly, I had to put two flat washers under them. I soldered two capacitors to the motor terminals, and hard-wired the motor to my speed controller. In retrospect, I also recommend that you mount the motor on the rear pod before you attach the Lexan chassis pan. Why? It would give you more room for the motor. The instructions don't suggest any method for installing the motor. Ah, the benefits of 20:20 hindsight!

BODY WORK

The 'Vette's Lexan body is unusual in that it's made up of four major pieces: the front bumper and grill, the main body, the hood liner and the rear bumper. The parts go together in such a way that you can't see the joins, and they're held together with small pieces of servo tape. The finished body is light and tough and looks very true-to-scale. I didn't install the black piece of cardboard that's supposed to hide the wires, and this made it easier to fit the antenna strip I mentioned. The completed body is attached to the chassis with Velcro® tabs.

BODY PAINT

For the finishing touches, I took the easy way out and sent the body to famed custom body painter Richard Muise of Motion Graphics*. He came up with a first-rate scheme in dark purple with black shading. The flames on the side of white, yellow and



From any angle, the Hemi 'Vette is one of the coolest, most highly detailed R/C kits around! Chrome "mag" wheels add to the 'Vette's hot-rod mystique.

orange add a touch of '50s drive-in dash and seem to go with the power that a Hemi V8 is all about. If you want a real showstopper, give Rich a call. You won't be disappointed.

BIG BLOCK

The plastic Hemi V8 kit comes with the package, and it's very easy to put together. After painting all the major parts, I joined them with CA. I used Krylon spray paint for the engine block and then painted all the smaller pieces with Testor's Master Modeler paints and a small brush. To ensure a good bond between the chromed parts, scrape the chrome off where the glue goes. All the parts are highly detailed, but the entire engine took only about three hours to build and paint.

For the ignition wires, I use plain old electrical wire, and the braided fuel lines are wire that I painted with metallic (brass color) Testor's paint. To get a really good-looking "brass," I don't shake the paint up to mix it before I use it. Instead, I use a swizzle stick to scoop out the thick paint that has settled to the bottom. Then, using just a little thinner, I thin this sediment to a thick, but "brushable," consistency. When it has dried, it looks convincingly like braided fuel line.

I painted the blower belt with flat black and used Gun Metal for the exhaust stacks and other small parts, e.g., the fuel pump and the oil sump. To trick-out the chrome blower housing and the scoop butterflies, I painted parts of them with metallic paint (brass again).

When everything had dried, I attached

(Continued on page 66)

PROJECT

by JEFF BRONSTEIN

IMPACT



THE POPULARITY of $1/10$ -scale nitro-powered cars continues to grow, but so much of the after-market technology that makes electric-powered cars kick is still absent. When Car Action first tested the Serpent® Impact 10 (March '92), virtually no after-market parts were available for it. The original design was excellent, however. The exceptionally rugged car featured such high-tech features as a race-proven independent suspension with oil-filled shocks and a rear belt-drive train, but in contrast to the $1/10$ -scale Serpent 6000 Series, the stock Impact 10 was drastically underpowered.

Since then, many new parts have become available, and a wider range of engines can be used to push the car's performance to new heights. If you make the most of the Impact's potential, you can transform this mild-mannered $1/10$ -scale oddity into a flat-out nitro-breathing speed demon. Electric racers, beware: there may be a "Sudden Impact" on your tail!





Mounted on the Impact's sturdy aluminum chassis is the O.S. Max CZ-R engine and a bevy of new competition components, including a shrunken Ron Paris High Energy pipe.

HOP-UPS

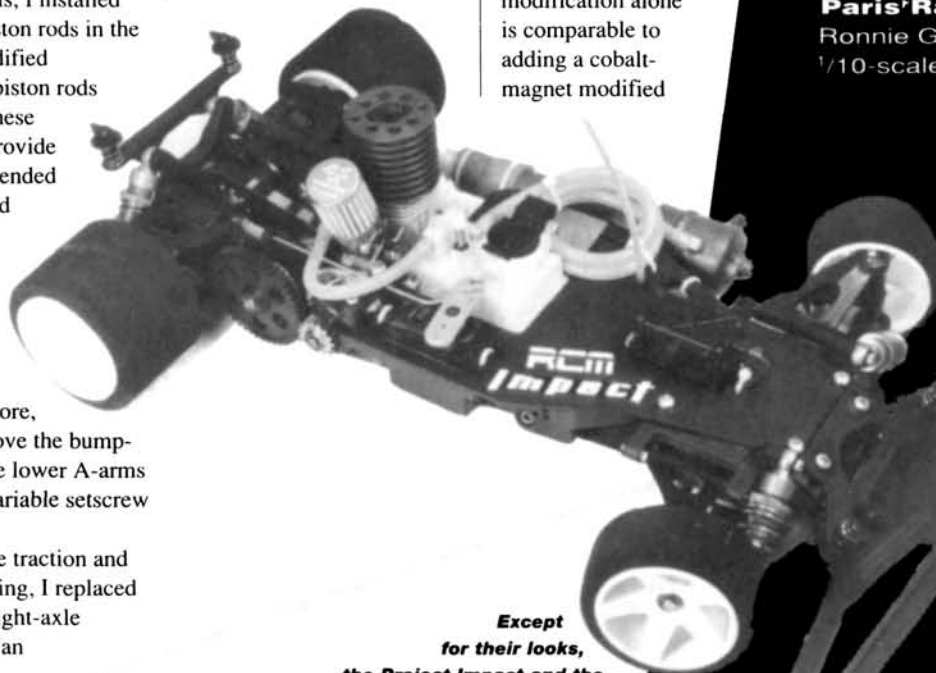
Rather than build a new kit, I decided to hop-up the sport version Impact that I reviewed for *Car Action*. My goal was to make it the same as the Impact's competition-version car. This car is already very solid, but a car can never be *too* strong for serious competition. I beefed up the front-end steering linkage with Tecnacraft's* titanium turnbuckles and a new Serpent servo-saver. I replaced the stock plastic shocks with Serpent's 1/10-scale gold-anodized, aluminum-bodied shocks, but the shock rods limited the suspension travel slightly. To remedy this, I installed rear shock piston rods in the front and modified Associated* piston rods in the rear. These longer rods provide smoother, extended movement and improved traction. If you want to extend the suspension's down-travel even more, shave or remove the bump-stops from the lower A-arms and use the variable setscrew down-stops.

To improve traction and enhance steering, I replaced the stock straight-axle rear end with an

excellent, fully adjustable ball diff. It should provide much smoother cornering and a tighter turning radius. I assembled the diff and covered everything with just enough Paris Racing* Ronnie grease. (It's really thick and it won't fly off at high rpm.) I replaced the black plastic dogbones between the diff and the stub axles with strong steel ones. For smooth, slop-free movement, I installed sealed precision ball bearings in the front and rear, and front and rear sway bars help to balance the car in the corners. The front sway bar is identical to that on the 1/8-scale version; it's

very effective, but, unfortunately, it isn't adjustable. Adjusting tire compounds and tire widths should alter traction.

The final stock item to "get the ax" was the .10cid Magnum engine. (The sport-version Impact still comes with this, but the competition version lacks it.) Although there are .15-size dynamos on the market (including Serpent's Mega RS .15, which wasn't available in time for this project), initial reports are that the O.S.* Max CZ-R .12 is a good match for most tracks. This modification alone is comparable to adding a cobalt-magnet modified



Except for their looks, the Project Impact and the stock Impact have very little in common. The Project car's suspension, steering, engine and differential have all been updated.

PROJECT IMPACT

PARTS LIST

Tecnacraft

Titanium turnbuckle linkage

Serpent

Servo-saver

1/10-scale aluminum shocks

Associated

Shock shafts

Serpent

Adjustable ball diff

Sealed ball bearings

Front and rear sway bars

Lightweight flywheel

Two shoe clutch

O.S.

CZ-R .12 engine

DuraTrax

Slide carb

Heat-sink cylinder head

Paris' Racing

Ronnie Grease

1/10-scale High Energy tuned pipe

Parma

Intrepid GTP body

Bich'n Bodies

Custom paint job

*"It holds
the corners
like Marla
Maples holds
on to Donald
Trump's Gold Card."*

PROJECT IMPACT

motor and a 10-cell pushed pack to a stock 10L. The CZ-R is a great little unit; it can even be modified with a pull-start, but you can't order the pull-start with the engine (go figure). It must be ordered separately with a special replacement crank, and you have to tear down and reassemble the entire engine just to install it. The cost of the pull-start is also considerably more.

If you do use the pull-start, use fuels with synthetic lubricants only. Castor oil seems to sneak into the one-way bearings and congeal, causing numerous problems. Although the starter is convenient, without it, the engine is less likely to break and can be fired using a hand-held or an electric bench starter.

HEAD GAMES

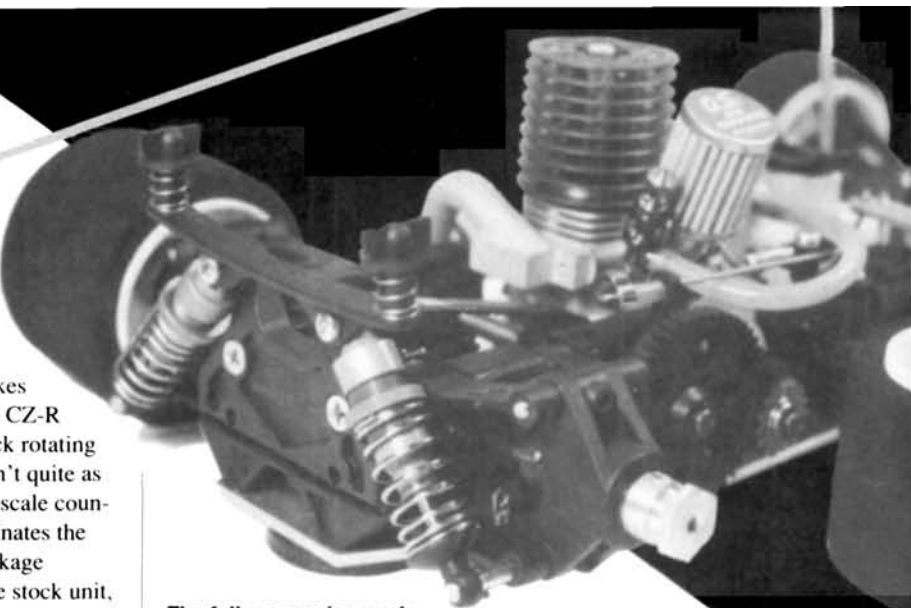
Because smaller engines tend to run considerably hotter, I replaced the CZ-R's stock heat sink with a larger, blue-anodized one from DuraTrax*. Its larger surface area helps to dissipate heat more efficiently, particularly when the engine is installed

under the body or only part of its head sticks through.

DuraTrax also makes a slide carb for the CZ-R (to replace the stock rotating carb). This carb isn't quite as advanced as its $1/8$ -scale counterpart, but it eliminates the tangled throttle linkage arrangement on the stock unit, and it can improve engine response slightly. At the other end of the engine, I replaced the stock expansion exhaust chamber with an aluminum manifold and a new Paris $1/10$ -scale High Energy tuned pipe. Although a tie-wrap or two can hold the pipe in place, it won't support or protect the pipe as well as some $1/8$ -inch-diameter music wire and a pipe-mounting bracket will.

To improve the power delivery, I installed a new light flywheel and a two-shoe clutch on the engine's output shaft. I put a small O-ring retainer on the clutch to improve the Impact's low-end performance, but you could also modify the flywheel to accept three or four spring-loaded shoes for the same result. The newly designed clutch bell has three pinion gears, and you can

adjust the gear alignment by moving the engine-mounting brackets forward or backward. A two-speed transmission and a fiber disk-brake conversion are also avail-



The full suspension works even better with the aluminum-body shocks and the longer shock rods.

able for the Impact, but I chose not to use them. Although the two-speed would improve performance dramatically on unusually long tracks, I hesitate to drag $1/10$ -scale gas racing into the same "money pit" that $1/8$ -scale has gone. Hopefully this gas class will remain accessible to all racers.

THE BODY

Before I mounted the body, I had to shorten the unique "pin-less" body posts on the front end considerably so that they would match the front end of the Parma* Intrepid body. I had equipped the original car with a stock-car body, and it limited the airflow to the engine. (I had to remove the side and front windows to prevent the engine from overheating.) The Intrepid body is much lower and allows the new heat sink to protrude, so the engine stays cooler. After I had trimmed the body, I called on the folks at Bich'n Bodies* for a subtle, distinctive paint scheme. As always, they delivered. The smooth lines of the "arrow" design point the way to the future of $1/10$ -scale racing. After a few quick suspension adjustments, the car was ready for track action.

Racers seem to associate

skill with speed, and unfortunately, "faster" always seems "better." The designers of the Impact apparently had this in mind when they developed the competition version. Michael Salven of Team Serpent nearly matched the performance of a 2WD Serpent 6020 with the competition-ready Impact. Not surprisingly, I was anxious to see if I could duplicate the feat. After a careful engine break-in period, I dialed-in the carb for race conditions. After only a few seconds, I knew that this car was a mover.

HAVE AN IMPACT

It may look like the original version, but my Impact is a completely different creature. Its overall performance equals or slightly surpasses that of most modified electric race cars.

The new gear ratios allow you to tailor the car to any track. Acceleration is crisp, but because electric motors produce maximum torque at zero rpm, the Impact will never match most electrics off the line or through sharp corners. The Impact really distinguishes itself on long straights and

(Continued on page 106)



The CZ-R engine makes this Impact much less temperamental than the stock model.

NORRCA
MICKEY THOMPSON
**OFF-ROAD
RACING**

by JIM SHEPKA

THE MICKEY Thompson Off-Road Racing Series that was held in Dallas, TX, included more than 100 R/C racers who competed in an event sponsored by NORRCA.

Directed by Steve Webster, the members of the Indy R/C World Club of Dallas set up the R/C facility near the full-scale pit area. With the sounds of full-scale racing trucks in the background, Webster's crew spent most of Friday preparing the racing surface.

The R/C track consisted of eight turns and, like the setup for the Mickey Thompson full-scale track, R/C racers had to decide whether to take the short, bumpy lane in the first turn or the long, smooth one. Both lanes in the first turn proved to be a challenge, and this produced some exciting racing.

The weather that Saturday morning was beautiful, and with the R/C track in perfect condition, the first round of racers came to the line. Two rounds of qualifying were scheduled with the Mains to follow.

During the competition, the local radio station, which was right across from the R/C track, broadcast the events, and behind us was a bitchin' car show that included some pretty exotic machinery. After-market auto-specialty stores had set up displays, and a live band was crankin' out some great tunes.



Top left: a large drivers' stand provided a good view of the track. ■ Top right: the R/C track is similar to the full-sized track and provides drivers with different but challenging routes through the first turn. ■ Middle left: Banzai! Major air time from the motocrossers! ■ Middle right: if you can't get around 'em, go over 'em! ■ Above left: racers bored with fixing their cars could head over to the "big" pits. ■ Above center: inside the stadium, there's some hot racing as well. ■ Above right: Team Toyota crew members.



Walker Evans

One of the most popular aspects of the Mickey Thompson Series is the pre-race autograph session. Since all racers are required to drive their vehicles into the stadium, this is a great opportunity to take photos and meet your favorite driver.

MEET THE STARS

The Truck Class was the favorite among the crowd, and many of the top drivers, e.g., Stewart, Mears and Evans, were surrounded by autograph seekers and fans with cameras.

My favorites were the little guys in the Motocross class. Most of the drivers were under 10 years old, and it was great to see them in their gladiator outfits signing autographs and being photographed with kids in the audience. I'm not sure who was having more fun—the kids or their parents.

Some R/C companies sponsor this type of racing, most notably Bolink and Autographics. Popular racer Jimmy Nichols is one of the Super 1600 drivers who has been carrying the Bolink banner for many years. Roger Mears Jr., of the Budweiser/Nissan Racing Team has Autographics as one of his sponsors.

PHOTOS BY JIM SNEPKA

OFF-ROAD RACING

I found it hard to focus on the R/C events with everything else going on, but with nine classes of racing on tap, it was pretty exciting. There was plenty of racing throughout the day, and many spectators were drawn to the R/C track.

The track's surface was of the same clay that was used inside the stadium and, with the hot Texas sun beating down on it, it soon started to



dry out. The R/C crew did a good job of watering the track between heats.

After two rounds of qualifying, there was an intermission so that the Mains could be arranged and the R/C racers could check out the other activities. When the Mains were finally called to the line, spectators crowded around the R/C track. Given the number of first-turn shunts, there must have been a lot of nervous drivers in the stands. Turn one with its lane options produced some very creative driving that brought cheers from a very enthusiastic crowd.

One of the most popular Mains was the Open Truck Class. These vehicles, which closely

resemble their full-size counterparts, produced the loudest ovations.

After the final Main, people began to disperse and move into the stadium for the big show. Most R/C drivers quickly packed their gear so that they could check out the action inside.

Thanks to the drivers and the sponsors, this was a successful, exciting R/C event. If the Mickey Thompson Series is ever in your area, I recommend that you take in all the fun. ■

Race Results

2WD EXPERT STOCK A-MAIN

Final	Qualified	Laps	Time	Name
1	2	14	4:15.91	Steve Cross
2	3	14	4:16.77	Tommy Yazzie
3	6	13	4:02.94	Bobby Keys
4	9	13	4:09.45	John Tsai
5	1	13	4:11.88	Danny Montgomery
6	8	13	4:17.20	Gary Haggard
7	0	12	4:06.38	Keith Harrier
8	4	12	4:09.11	Kevin Hickey
9	5	12	4:11.07	Lynn Marchant
—	7	—	DNS	Jack Hopkins

EXPERT MODIFIED TRUCK A MAIN

Final	Qualified	Laps	Time	Name
1	2	14	4:02.39	Cory Williams
2	8	14	4:04.65	Dennis Taylor
3	5	14	4:14.54	Tom Owens
4	6	13	4:06.01	Tony Newhouse
5	7	13	4:10.11	Jason Branham
6	4	13	4:11.61	Gary Haggard
7	9	13	4:19.67	Kyle Wilson
8	1	12	4:14.53	Hal Cameron
9	0	11	4:07.63	David Hill
10	3	1	0:24.63	Michael Chellson

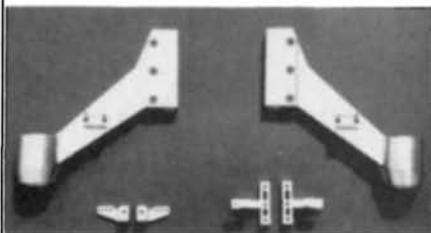
2WD EXPERT MODIFIED A-MAIN

Final	Qualified	Laps	Time	Name
1	4	14	4:06.84	Mod Bob
2	3	14	4:14.01	Tommy Yazzie
3	5	13	4:01.83	Tom Owens
4	2	13	4:12.01	Jason Branham
5	6	11	3:30.15	Chris Metheny
6	7	10	3:39.01	Richard Mollock
—	1	—	DNS	Kirby Tschoebe



Obviously, these drivers never graduated from the Cliff Lett School of Driving.

Bullet Proof Your 1/10 1/12 1/4 Scale



Raco 1/4 Scale

Rear Trailing Arms	\$159.99
Front Trailing Arms	69.99
Shock Towers	59.99
Steel Cross Shaft	12.99
Shock Tower Braces	9.99
Associated 10L or 12L	
Front Suspension Arms	39.99
Tamiya King Cab or Hi Lux	
Steering Spindles	19.99

All Parts 6061 T-6 Aluminum
Machined In House



FALLS HOBBIES
1515 Northgate Mile
Idaho Falls, ID 83401
(208) 529-8650

VISA - MASTERCARD
Freight Not Included
Add 5% In Idaho
Dealer Inquiries Welcome

GLD 1/4 Scale & Gas Car Specialists
RACECARS / INC.

"Home of the \$795

1/4-Scale Grand
National Car."

Call for information or visit us.

World's 1st speed shop for
R/C cars. We're racers—
talk with us.

Visa/MasterCard

For retail or mail order information,
please call: (516) 243-4152.

• **GLD Racecars, Inc.**
370-B Commack Rd.
Deer Park, NY 11729

A WINNING ATTITUDE

IF YOU RACE an R/C car or truck, you probably want to be a winner. A winner doesn't just cross the line first, though, he has something more important—a winning attitude. Being a winner requires an understanding of common courtesy and fair play—both on and off the track.

I haven't seen a book or an article that describes how to develop such an attitude in R/C. Advice abounds on driving technique and equipment selection, but we're left on our own to figure out how to conduct ourselves at the track. Although each track publishes a set of rules, we must look beyond them to learn the finer points of a winning attitude.

Some of these points may be obvious (don't cheat), but others must be learned (share your secrets with others). In this article, I'll discuss some of the things that I try to remember whenever I'm at the track.

TO ERR IS HUMAN

It takes constant effort to maintain a winning attitude. One night, I walked onto an indoor carpet track to pick up my RC10. I hesitated for a second and an ultralight pan car ran up my leg (I'm always shocked by how fast those things are!), but I strolled back to the pits without checking the car for damage or even apologizing for my blunder. I must have left my winning attitude at home.

After I considered my poor judgment that night, I gave more thought to overall track behavior. Later, I listed all the ways in which I

had seen others display a winning attitude (or lack of it) at the track.

DRIVERS' WINNING ATTITUDES

On the drivers' stand, you focus on one thing—your car. You share that little stand, though, with maybe half a dozen others who are trying to do the same. There are several things you can do to make the race more enjoyable for fellow drivers:

- Wish your opponents good luck before the race

and compliment good driving when it's over. Avoid moving around, stomping your feet, or throwing tantrums (sadly, I've seen it happen). Don't shout or swear; shouting breaks other drivers' concentration and swearing shows a lack of maturity. Besides, this is a family sport. If you can keep noise and commotion to a minimum,

all will benefit.

- Try to be tolerant of other drivers' shortcomings, e.g., be patient if a race is delayed by a driver who's late. He may be new to R/C racing,



The R/C track is a great place to meet people and share ideas.

or maybe he's just having a bad day. Your car's batteries won't dump when it's sitting quietly at the line, and you can use this time to double-check your transmitter or review your race strategy.

- Don't lean over the stand or hold your transmitter out over it or do anything else that will obstruct someone else's view. Each driver holds his radio differently and antennas often point in every direction. Be sure not to let yours hit a driver or his antenna. While we're on the subject of antennas, some drivers believe that PCM radios interfere with their older wide-band receivers. If you use a PCM radio, many tracks require you to lower its antenna halfway. I use one, and I don't notice any difference when its

antenna is halfway down—and other drivers can't blame me for interference.

- If your car becomes tangled with another car, let off the



I don't mind sharing the drivers' stand with guys like this. Everyone is well back from the rail and has a good view of the track.



Have you ever shared a drivers' stand with people like this? Who will be able to see his car as it passes the stand?

PHOTOS BY STAN VANDRUFF

throttle. Squeezing the trigger won't untangle you; it will only waste batteries and possibly damage one of the cars. *Always* let off the throttle when a marshal has your car, otherwise he may be seriously scraped or burned by the spinning tires. If this happens, he might not be in a hurry to help you the next time you need it.

- Don't bump into other cars or try to run them off the track. If you accidentally hit one, apologize to the driver. If your car ends up facing backward or if it's accidentally run off the track, wait for traffic to clear before you re-enter the race. It won't do you any good to rush back into the race if all you're going to do is cause a pileup!

- Pull over and let faster cars pass. Never zigzag across the track just to prevent a faster car from passing you. It will get around you anyway, and you're just asking for a trouble. If you wreck your car, more than *one* car will pass you.

- The race isn't over till it's over. Even if you're



A winning attitude starts with courtesy and sportsmanship. Congratulating a competitor is a good sign of a winning attitude.

having a bad day, don't leave the stand until the finish. If your car is having such serious problems that it's getting in the way of others, pull off the track.

- Don't ever drive the wrong way on a track, even after the event is over. At the end of a race, some drivers like to turn their cars around and drive them back to the stand. This is dangerous, because these cars could collide head-on with those that are just crossing the finish line. A head-on can seriously damage your cars, guys, so please, go around one more time or stop well past the finish line.

Most of the winning attitude is common sense. The winning starts when you consistently apply what you know. I hope you've learned a few things here and that you'll put them to use. ■

Andy's

R/C PRODUCTS BEST FROM THE WEST



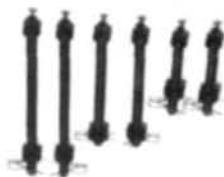
3152 LOTEK GTP, 1/10
Winner of '91 ROAR NATS
4152 LOTEK GTP 1/12 SCALE



RC-10T STADIUM TRUCK
Racing Truck body.
PART # 3033



NASCAR 1/10 • 1/12
SUPER SPEEDWAY 1/10
.030 LEXAN BODIES



BODY POST
3206 2 INCH "ON ROAD" BODY POST (pair)
3207 3 INCH "ON ROAD" BODY POST (pair)
3208 4 INCH "ON ROAD" BODY POST (pair)
3205 BODY POST SET "OFF ROAD"

1710 Grevillea Court • Ontario, CA 91761
(714) 923-6155 • FAX (714) 923-6156

Made In U.S.A.

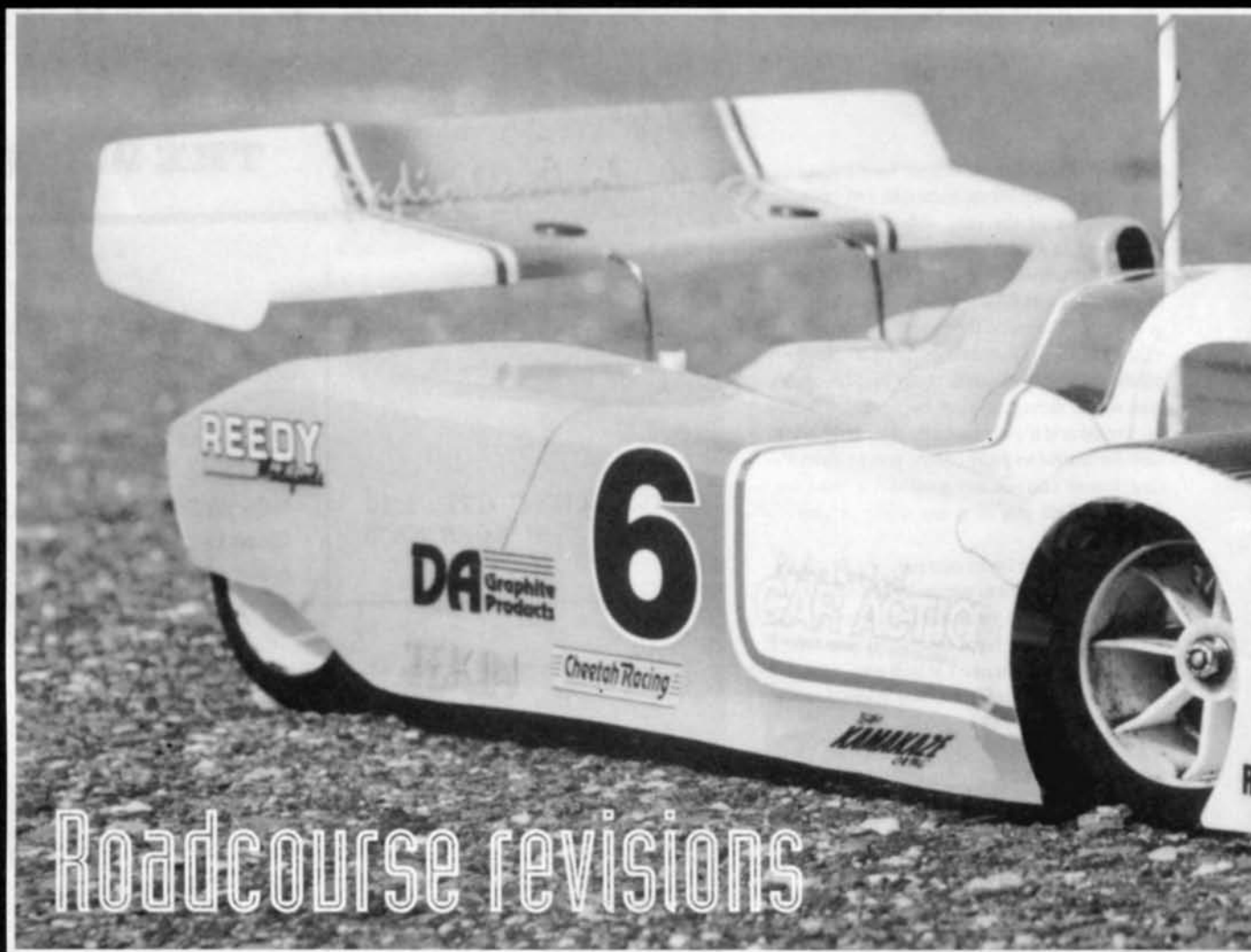
INCREASE SPEED AND ACCELERATION

By reducing drag with a dry-film lubricant of space-age polymers!

- Lubricates under loads 50% greater than oil.
- Extends bearing life by 3 times.
- Reduces operating friction by 25%.
- Remains effective twice as long as oil.
- Operates in temperatures of up to 550 degrees Fahrenheit... and no CFCs!

Send \$7.95 for a 1.7-ounce bottle, or \$19.95 for three bottles, postpaid!
Micro-drop applicators included. Dealer inquiries welcome

JUMP JUICE, 4732 LEBANON ROAD, MINT HILL, NC 28227



Roadcourse revisions

WHEN ELECTRIC 1/10-scale road racing hit the scene in the mid-'80s, car manufacturers scrambled to produce a great racer for us. The 1/10-scale on-road cars were much easier to drive than the smaller, 1/12-scale rockets, and they used the same batteries and electronics as the 1/10-scale off-road cars. Most of us took to them quickly.

by MIKE LEE

Now, the 1/10-scalers more than hold their own against those in the other classes, and asphalt

tracks have sprung up all over the country. Associated Electrics* took part in this revolution—not as the *first* manufacturer to release a 1/10 scale on-road car, but as the manufacturer of a winner—the RC10L.

The 10L has dominated road racing since it was introduced a few years ago. Its design is simple (few parts), and it's competitive right out of the box. So how do you improve on something this good? That's what we're here to find out in Project RC10L.

ASSAULT ON AN ASSOCIATED

I use all kinds of after-market goodies on my Project car. I admit to trying a few things that just did *not* work, but I won't bore you with the details.

I started with a bone-stock, RC10L kit that had a graphite chassis and axle, all bearings, black front tires and green rear tires.

• I replaced the standard, but reliable, chassis plate with a composite chassis plate from DA Graphite*. It's made of graphite and has plywood sandwiched

PROJECT RC10L

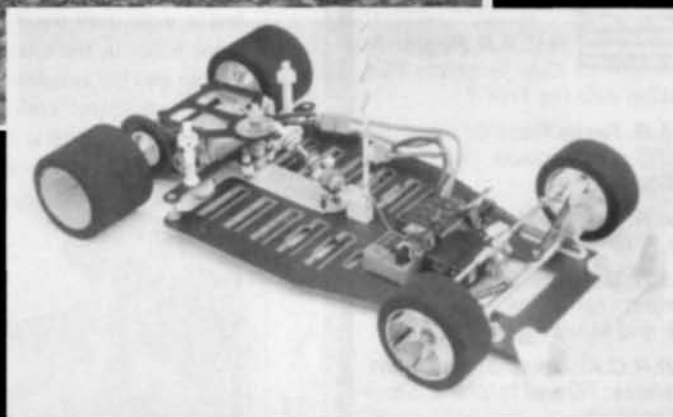


between the middle layers. It's lighter, but still much stiffer than the original kit's chassis. From just behind the front wheel mounts to the tip of the chassis, it's made of 100 percent graphite (no plywood). This ensures maximum strength at the front where there car is most likely to be damaged. The holes in the DA Graphite chassis are the same as those in the original, so the swap was easy to make.

• I replaced the standard front end with "the Ultimate"—an aluminum-

beam front end from Cheetah Racing*.

The Cheetah front axle is unique because you can adjust wheel caster and camber with it. The main beam (an aluminum bar) is "cinched down" with a single, 8-32, Allen-head bolt on the left side of the beam mount. You'll need an angle gauge to discover exactly how much caster you have. Adjust camber with the two camber arms that are attached to the top of the wheel mount and to the main beam, just



shy of the middle. A turn-buckle is just the ticket for making those fine adjustments.

At the wheel mounts, the Cheetah front end has a hefty nylon mount that pivots at the bottom to allow the camber to be changed. Standard king-

My goal with "Project 10L" was to make the car even better by modifying it with after-market parts.

TRX-1

**GO WITH A
WORLD CLASS
WINNER!**



IN ENGLAND

Rick Vehlows swept the 2WD Reedy Invitational with 4 wins and 1 second place finish in the five race series.



IN FRANCE

TRX-1s piloted by Lecocq, Delapierre, and Sibille (resp.) produced a 1,2,3 sweep of the French Nationals.



IN AUSTRALIA

Darren Cambel drove his TRX-1 to a first place victory in the Australian National Championships.



AT HOME

R.O.A.R. Region 8: Kyle Simmons TQs and Wins with his TRX-1.

R.O.A.R. Texas Race Of Champions: TQ and 1st place, Two-Wheel Modified.

R.O.A.R. Texas Invitational: 1st place, Two-Wheel Modified.

R.O.A.R. Georgia State Championships: 1st place, Two-Wheel Stock and Modified.

N.O.R.R.C.A. Texas State Championships: TQ and 1st place, Stock and Modified.

R.O.A.R. Region 9: 1st place, Two-Wheel Modified.



TRAXXAS

PARTS USED

- Associated RC10L
- Associated .018 springs
- Associated .020 springs
- Associated carbide diff balls
- Airtronics 94143 servo
- Airtronics Caliber 3P radio
- Bud's ceramic diff rings
- Cheetah Racing Ultimate front end
- Cheetah Racing Ultimate Pro Flex rear end
 - DA Graphite chassis
 - Du-Mor spur gear
 - HPI wing buttons
 - Inside Line rear hubs
- Protoform Peugeot 905 body
- RCPS titanium turnbuckles
- Tekin 410K speed controller
- Tekin TFM 27 receiver

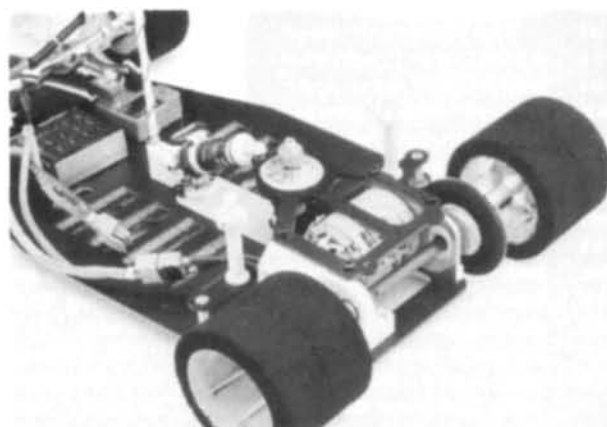
pins and suspension springs meet the standard Associated steering blocks. The Ultimate front-end kit provides a 4-40 threaded wheel axle, so there's no need to use an E-clip at the tip of the axle.

The Cheetah front-end kit fits the same holes as the original suspension mounts, but it uses only two of the three holes in the chassis. I had to put the original kit's front-end shims under the Cheetah front end to lower the nose. Without the shims, the front end is so high that

you'll definitely start to scrub off the rims way before you hit the chassis on the track.

To cope with the front wheels and provide toe-in/toe-out adjustment, I use R/C Performance Specialties* titanium turnbuckles. These grab a 4-40 nut for adjustment, and they're a lot easier to handle than standard turnbuckles. (I just hate the little hex parts on standard turnbuckles!)

I put the 10L rear end on a diet. The stock aluminum



The rear of Project 10L has been updated with Cheetah Racing's Flex Pro rear end. This conversion narrows the rear of the car and uses rocker balls instead of a T-plate to control rear-end movement. A rear chassis stiffener similar to the one on the 10L SS is also used.

wheel hubs aren't particularly heavy, but there are lighter ones out there. I mounted Inside Line wheel hubs, which are machined out of aircraft-grade aluminum and have holes on the diff side to save weight. Trick stuff, and very light.

While looking at the rear end, I decided on the Cheetah Pro Flex rear-end kit, which not only centers the motor on the chassis, but also makes the rear end on the 10L road car narrower. (For the 10L SS car, the rear end is the same.) The Pro kit's main feature is that the T-bar from the original is replaced by one with mono-ball pivots. This causes the rear end to rotate around the ball pivots, rather than around the T-bar itself. The original oil-filled shock now does more work. This kit also uses T-bar springs to control body roll (similar to the "load-leveler" springs found in the Advanced Racing Technologies Agitator cars).

The Pro version of the Flex rear end provides a couple of other nice goodies. The damper post is threaded to accept an 8-32 nylon nut, and this allows you to make fine adjustments to the 10L damper plates. (The 10L kit has a tubular post on which a nylon collar is used. Fine adjustment takes a little patience.)

To finish off my assault on the rear end, I replaced the diff rings with ceramic ones from Bud's Racing Products*. Their super-hard surfaces allow superb diff action that has to be felt to be believed and should last a long time. Use them with Associated carbide diff balls, and you're all set! The diff balls are seated in a thin, 120-tooth, 64-pitch Du-Mor R/C* spur gear.

GUIDANCE GOODIES

With the basic car completed, I moved on to the electronics. A car must not only have the right running gear, but it must also be guided by the right stuff.

• I started by installing a servo that can match the speed of a road car. I chose the Airtronics* 94143 servo, which has a transit speed of 0.08 second for a 60-degree rotation. This isn't the servo for everyone, though. It has 33 ounces of torque, and that's fine for a 1/10-scale road car, but it can't take much abuse. Its plastic gears weren't made to hit walls too often, so if that's what your cars tend to do, don't think about this servo. Choose the 94141 servo instead; it isn't as fast, but its gears are much heavier.

• To the servo, I mated the Tekin* TFM, FM micro receiver—the world's smallest FM-type receiver. It has three channels and is actually the same size as the original AM micro receiver, so it fits anywhere on the 10L chassis. Sending the signals to this little jewel is the trusted Airtronics CL-3P Caliber radio (no problem for the Tekin receiver to listen to the transmitter).

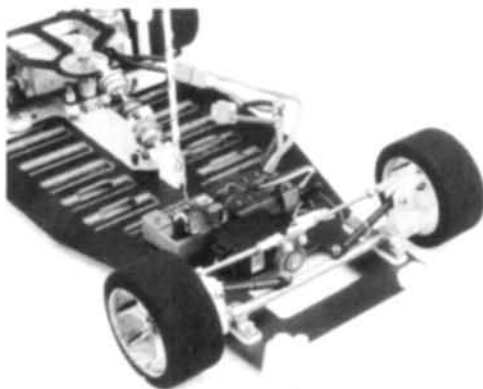
• For power, I brought in a heavy hitter—again from Tekin. This time, it's the unique, 410K microprocessor-controlled speed controller. All commands—from adjusting the radio to the controller to initial brake settings—are input at the controller's keypad. The instruction manual is easy to follow, and you'll soon find yourself dialing-in this baby to the car. You can even turn the car off from the transmitter—without touching the car. It handles a minimum of 300 amps.

That should cook ya!

BODY BEAUTIFUL

With aerodynamics in mind, I chose a slick, Peugeot 905, Group C body from Protoform*. It's a short-tailed, closed coupe with a true-to-scale, but effective rear wing. Downforce on the nose is considerable. I finished it with bright Pactra* Race Paints and, of course, I just couldn't resist using *Car Action* decals. To mount the wing, I used HPI* button wing mounts.

There's no reason to throw away good tires, and so I remounted the original black fronts and green rears.



The Cheetah Ultimate front end features adjustable camber, caster and toe-in. It's bolted to a DA Graphite chassis that has a wooden core for lightness.

So what's left of the original car? The rear axle, the motor-mount side plates, the main shock and the damper plates, the antenna mount and tires. It was time to see what the Project 10L could do on the track.

GOING WITH GOODIES

The City SuperSpeedway in San Diego, CA, is an indoor asphalt track with a banked oval and a tight roadcourse in the middle. It challenges car and driver, so you won't do well if either is out of whack. With a basically stock RC10L, my best time on this track is only 2 seconds off

the track record, so I knew what to expect with the Project car.

The first run was a bummer because the car pushed on every turn. The 0.024-inch-wire front-suspension springs that came with the Cheetah front end were too stiff, so I immediately substituted Associated 0.018 springs. This solved the problem right away, and the front end stuck to the track.

Then the rear end started to break away.

The rear springs used to control body roll on the Pro Flex rear end were far too heavy. Associated 0.020 springs improved things, but not quite enough, so I gave the rear-end damper disks a small shot of Bolink* super-thick silicone lube. Once again, Project 10L hit the pavement, but this time, it hit the pavement flying!

I now had a car that was not only responsive, but was also firmly glued to the track. The Project car's narrow rear end enables it to turn corners

(Continued on page 106)

WAY TO GO!

CONGRATULATIONS to these Traxxas drivers who all placed in an "A"-main at the 1992 N.O.R.R.C.A. Nationals!

**JAMES BROWN
TYRONE CLARK
STEVE DUNN
CHUCK ERICKSON
DEREK FURUTANI
ANDY HALIO
QUINCY HUGHES
DON McMILLAN
EUSTACE MOORE
SCOTT RISTER
SCOTT ROBERTS
JOHN WALTERS**



BLUE EAGLE LS



TRX-1

TRAXXAS



Ace Hardware Hobbies



1/8 Scale Gas

Gas Cars

On-Road

Serpent (6020)	\$499.99
Bmt 891 2spd	\$539.99
Bmt 892 (2wd)	\$369.99
Bmt 893 3spd	\$609.99
Bmt 895 Custom	\$749.99
Pico Genesis/motor	\$809.99
Delta P2 2wd	\$309.99
Parsec 4wd	CALL

Off-Road

Burns Dx	\$239.99
Inferno	\$449.99
Bmt 911	\$469.99
Pirate	\$339.99
Super Pirate M3	\$449.99
Mugen S.S. '92	\$449.99
Mugen 2wd/Motor	\$449.99
Nitro Crusher	\$349.99

1/10TH GAS

Impact 10 Comp.	\$285.00
Pirate 1/10 4wd	\$175.99
Leo .12 /pull start	\$109.00
O.S. CZR	\$79.99
Tuned Pipe /Impact	\$52.00
Tuned Pipe /Ramp.	CALL
O.S. Slide Carb	\$39.99

Engines

Stock

Novarossi Red Head	\$219.99
Pico 5-Port	\$209.99
OS RXB	\$219.99
OS RXR	\$209.99
Rex 3-Port Buggy	\$189.99
Rex 7-Port	\$269.99
Topp 8 Port	\$339.99

Modified

Pico 5-Port	\$239.99
Paris OS RXB	\$299.99
Rex 3-Port Buggy	\$239.99
Rex 6-Port	\$299.99
Rex 7-Port	\$309.99

Accessories

Rex Pipe Al650	\$35.99
K&N Filters	\$ 8.95
On-Road Bodies	\$17.00
1/8 Lumina Body	\$17.00
On Road Starter/	
Box With Motor	\$99.99
Temp Gun	\$299.99
Digital Caliper	\$95.00

Custom Parts

On-Road

Bmt Universals	\$55.99pr.
Serpent Universals	\$55.99pr.
Alloy Wheels	\$89.99(4)
Bmt Rear Alloy/	
Bulkhead	\$109.99
Bmt Side Belt Ten-	
sioner/Center Shaft	\$69.99
Fr. Wheels Mounted	\$15.99pr.
Rear Wheels Mounted	\$15.25pr.

Off-Road

Pirate Dual Brake	\$59.99
Burns Alloy Arms	\$55.99pr.
Burns Fiber Brake	\$14.99
Many Other Parts	

Information

ACE HARDWARE HOBBIES
1863 EL CAMINO REAL
BURLINGAME, CA 94010
415-697-6099
FAX 415-697-6801

SEND \$5.00 FOR EXTENSIVE CATALOG
 Handling \$5.00. COD Chrg. \$4.00
 Ask for JR when ordering
 Prices Subject to Change w/o Notice

DEALER INQUIRES WELCOME!

PARMA 'VETTE

(Continued from page 44)

the engine to the chassis pan with servo-mounting tape. The engine fits into a small indent in the pan, so you don't have to worry about positioning correctly. When everything has been buttoned up, you can almost smell the burning rubber, juicy hamburgers and greasy fries!

DOWN AT THE DRIVE-IN

This model is made for serious cruising and, with the Trinity motor, it will do donuts all day long. It's not a competitive racer, but it was never meant to be one. Its rear-end "slip" is adjustable though, so you can alter it to pep-up performance. Simply tighten or loosen the plastic locknut on the right rear wheel to get the feel you want. The low body has a minimum of ground clearance, so you should only run this beauty on smooth, parking-lot asphalt.

When you buy the Parma Hemi 'Vette, you get exactly what you see—a beautiful, cruising, R/C machine that looks right at home with leather jackets, DAs and T-shirts. If there's a little of the greaser in you, or if you're a classic drag-machine modeler, this

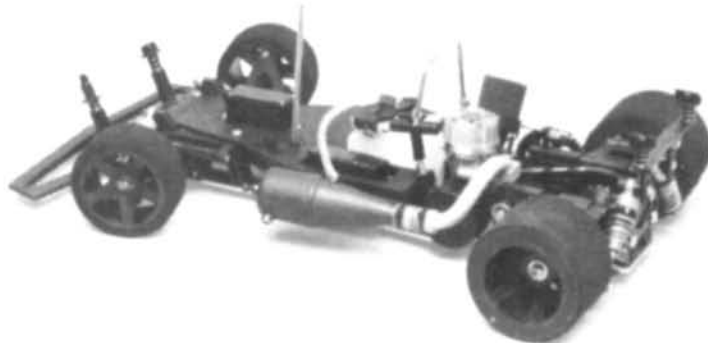
(Continued on page 106)

Impact 10

Serpent's 1/10 scale gas-powered racing car

STRONG, RELIABLE AND EXCITING

- pre-assembled rigid chassis
- independent suspension with hydraulic shock absorbers
- 1.7 cc engine with recoil starter
- high quality injection molded parts
- rear-positioned silencer
- a unique body-mount system
- easy radio installation
- low maintenance and running costs
- Audi Quattro or Nissan 300 ZX body included



(Shown with optional tuned pipe)

RCI



Go for the new Challenge in R/C Car Racing now!

R C Motor Sports of Miami, Inc • 4715 N.W. 157 St. Suite 204 - Miami, FL 33014

Telephone: (305) 620-0005 - Fax: (305) 624-1112

SCOPING OUT

TEKIN 410K

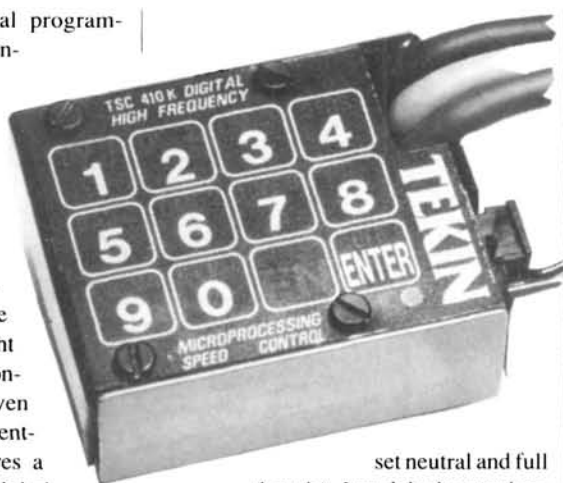
by JOHN RIST

I'VE REVIEWED several programmable electronic speed controllers (ESCs), including some microprocessor-equipped units with a multitude of functions, e.g., current limiting. All such controllers have one thing in common: they're hard to program. Some are so complicated that if you lose the instruction book, you might as well throw away the controller. To properly set up even those that have only current-limiting capabilities requires a lot of knowledge and a digital voltmeter. Tekin's* TSC-410K digital-programmable controller (no pots to adjust!) has changed all this. It's a racing-style, forward-only ESC with brakes that has the following features:

- six Goldfret transistors (five for forward, one for brakes);
- a reverse-voltage fuse;
- an auto thermal shutoff;
- three current limiters with two timers;
- programmable brakes/throttle response;
- a case that acts as a heat sink for the FETs;
- a chime ("Close Encounters" theme song) and an LED that verify programming and proper operation;
- a super-high-frequency motor drive.

You program the 410K using a keypad—it's extremely user-friendly—and you can turn the unit off at the transmitter. It comes with a spare fuse, tie-wraps, decals, a Deans Power Plug, an adaptable receiver plug, 13AWG battery-to-motor wire, mounting screws and tape. (It doesn't come with a screwdriver, because you don't need one!)

My first glimpse of this ESC showed me that it was truly new and different. Two unique characteristics were apparent immediately. Instead of FET tabs sticking out of the top of it, this unit has a durable keypad. It's also missing an on/off switch and trim potentiometers (usually used to



set neutral and full throttle). I read the instructions thoroughly and learned that you use the keypad to turn the 410K on and off; to match the unit to the transmitter trigger travel; to adjust the current limiters and set the timers; to set the minimum/maximum current levels for the brakes; and to adjust the trigger-response curves.

The current-limiting/timer features are exciting because they enable you to vary the current levels for different parts

of a race. In a typical high-speed-oval setup, for example, you can program the current level at 100 amps for the first 8 seconds, 40 to 60 amps for the next 2 minutes and then back up to 100 amps for the rest of the run. This setup would provide full-bore acceleration for the holeshot, followed by maximum control and "battery conservation" and, finally raw power for the win.

Being able to adjust the braking current is especially useful on roadcourses. Before the 410K came along, you had to dial-in the braking action at the transmitter. On this unit, however, you can actually adjust the braking system's minimum/maximum current levels, i.e., if you set it to 1 amp minimum and 10 amps maximum, the current will vary from 1 to 10 amps as you push the trigger toward full brakes. Throw in the ability to adjust trigger response, and you'll be able to set up your car perfectly for any track. (Note: with a fast-response setting, the throttle responds as soon as you move the trigger; with a slow setting, it responds slightly after you've moved the trigger.)

"SCOPING OUT" LAB AND TESTS

THE LAB consists of:

- an oscilloscope
- a digital voltmeter
- a variable-load resistor bank
- a 6V 30A electricity supply
- a Pit Stop Radio servo/speed controller tester.

The oscilloscope is used to monitor the controller's output and to guarantee that it's fully on.

The digital voltmeter takes all the voltage-drop readings and verifies the reading on the current meter.

The resistor load bank consists of 40, 12-ohm, 5W power resistors that can be switched on and off one at a time to vary the load between .6 amps and 20 amps, but the standard 12 amps are usually used.

In series with the resistors is a 25A Simpson current meter and a 1-percent 0.01-ohm resistor. By measuring the voltage drop across this resistor, the current-meter's reading can be

double-checked. Of course, the lab power supply provides the test current.

● **VOLTAGE-DROP TESTS.** These are the first tests. It's virtually impossible to read an ESC's resistance directly, so I measure the voltage drop across it with the resistor bank set up for 12 amps of current. I then calculate the controller's "on" resistance by dividing the measured voltage drop by 12 amps. I take the voltage reading twice: along the full length of the battery and motor wires (including connectors) and 2 inches along them. The first reading helps me to determine an ESC's "on" resistance as it comes from the factory, and the second gives a standard reading with which I compare ESCs.

● **LET-IT-COOK TEST.** I adjust the resistor bank to pass 20 amps of current, then I jam the throttle wide open and let the ESC pump the 20 amps.

● **DEAD-SHORT TEST.** With this test, I check whether the controller can survive the heavy current caused by a jammed gear or a fried motor. No one likes to have this kind of trouble and discover that his ESC has been destroyed, too.

AT THE LAB

All the features in the world are mere fluff if a controller can't provide kickin' performance. It was time to put the 410K to the test at the "Scoping Out" lab.

To turn on the controller, simply press any key on the keypad. (The unit will beep, and its LED will flash.) To match it to your transmitter, press the PROG key followed by the RADIO/5 key. The 410K will beep and blink, signaling that you have 5 seconds to move the transmitter trigger from full forward to full brake, and then return it to neutral. Afterward, the 410K will beep again—a signal that it's ready to go.

I tried several trigger-travel combinations, e.g., reverse first, forward first and less than full, and the 410K adjusted itself to each perfectly. The built-in pulse-checking LED also works extremely well; I verified this using my oscilloscope.

With the controller pumping current, it was time to see if it had the numbers to qualify as a serious racing ESC.

VOLTAGE-DROP TESTS

I always check resistance first, because it's one of an ESC's most important characteristics. With 12 amps of current flowing, the voltage drop along the length of the wires was 0.06 volt—a resistance of 0.005 ohm. Two inches along the wires, the drop was 0.04 volts—a resistance of 0.003 ohm. This, my racing buddies, is world-class-racing low "on" resistance!

LET-IT-COOK TEST

I increased the current to 20 amps—the average current in a 4-minute race—and I let the 410K cook for 15 minutes. For this test, I usually don't use a cooling fan, but I do ensure that the heat sinks are in place. With the 410K, however, I didn't have to worry about this; its FETs are inside its case, so the whole case acts as the heat sink. At the end of the test, the 410K was barely above room temperature—almost no heat build-up at all.

DEAD-SHORT TEST

I created a dead short across the motor leads. The current jumped to 42 amps (the limit of my bench supply), and I let the current flow for 1 minute. When I shut everything down, the case was only slightly warm. This super-cool operation can be attributed to two things: the 410K's low "on" resistance and its "heat-sink" case, which is extremely effective at dissipating heat.

The 410K has an automatic thermal-

shutdown circuit, but in my tests, the controller never became hot enough to trip it. (In fact, the amount of current that it would probably take to do so would be scary!) I'd like to pass along a few words of caution, however. A truly shorted battery pack can deliver more than 100 amps—enough to heat even the 13-gauge wire. If your car won't go, shut it down and find out what's causing the problem. A jammed gear, a fried motor, or a short caused by a frayed wire could destroy some very expensive equipment.

ROAD TEST

I received the 410K right before the ROAR Region 3 Off-Road Champs, and I wanted to run some serious "road tests" on this marvel of model engineering in my RC10 Team Car before the big event.

I read the instructions to learn the installation do's and don'ts. Because the keypad is on the top of the 410K and its case is also its heat sink, it's important to mount the unit *on the chassis*—preferably near the edge—and to ensure that the keypad will be easy to reach. You also have to ensure that the unit is positioned as far away from the receiver as possible. With these three factors in mind, I mounted the receiver on the shock tower and the 410K on the chassis. The instructions also recommend that you use the included motor filter caps, and there are directions on how to install them.

From the very first run, I knew that I had a winner on my hands. The punch off the line is awesome, yet throttle response is smooth and precise—a characteristic that's especially noticeable at the slow speeds around tricky jumps and turns. The 410K also provides all the advantages of high-speed motor-drive control, i.e., long runs (because of battery regeneration), cool motor operation and reduced wear and tear on the brushes.

I programmed some really drastic current-limiter/timer settings, e.g., 10 amps for 15 seconds, 20 amps for the next 10 seconds and then 99 amps for the rest of the run. With this setup, I squeezed the trigger to full throttle, which started the timers, and the car crawled off the line at a snail's pace. (Ten amps is, of course, way too low for racing.) At the 15-second point (as timed by a stopwatch), the car sped up a little and, 10 seconds later, it began to scream.

For racing, it's best to use the settings I mentioned earlier—maximum current for the first 10 seconds, down to 40 to 60 amps for 2 minutes and then back to

TSC-410K

DIMENSIONS:

Height (w/heat sink)	0.6 inch
Width	1.7 inches
Length	1.4 inches
Weight (w/wires)	1.85 ounces

TUNING:

Access to controls	Good
Ease of adjustment	Very easy

PRICE:

Suggested Price	\$220
Warranty	120 days

ELECTRICAL:

(Manufacturer's specs)

Max voltage	10 cells
Min voltage	4 cells
Max current forward	1050 amps
Continuous	
Current forward	300 amps
Resistance	0.0015 ohm

TEST PARAMETERS:

Voltage	6 volts
Current	12 amps

TEST RESULTS:

Voltage drop to end of wires	0.06 vol
Voltage drop,	
2-inch wire point	0.04 volt
BEC output, 6-cell battery	5.8 volts
Resistance—	
to end of wires*	0.005 ohm
Resistance—	
2-inch wire point*	0.003 ohm
*Resistance=voltage drop/amps	

COMMENTS:

The new Tekin 410K represents the next generation of speed controllers. Gone are the tiny trim pots that eventually drift. All functions are accessed through the 12-button keypad. A timed current-management system lets racers tailor their power output, and this should benefit many. My tests indicate that its "on" resistance is the same, or slightly lower than, the 411G's, which is so low that it's difficult to measure.

maximum for the rest of the race. It takes practice to program such settings to suit your driving style and a particular track, so you'll have to experiment to determine which are best for you.

The 410K's braking system is the slickest I've ever seen, and it has two settings. The brakes are linear across the trigger travel, and they have factory-adjusted default settings of 1 amp minimum and 120 amps maximum. Not all motors will generate 120 amps of braking current. If yours only generates 60 amps, the 120A factory setting will result in wasted trigger travel, i.e., the motor will reach maximum braking action before the

(Continued on page 138)

by JIM SHEPKA



RUMBLE ROAD



K Y O S H O

THUNDERBIRD

SOME PEOPLE just don't want to deal with batteries! They think that it's a hassle to charge, discharge, store, match and assemble battery packs just for a mere four minutes of run time. Gas-powered cars eliminate these hassles; you can simply fuel 'em up and drive. More and more manufacturers are probing the possibilities of 1/10-scale gas cars. They're smaller and lighter than conventional

1/8-scale cars, and they can be driven on the same tracks as electrics. In addition, many 1/10-scale gassers are based on electric cars, so they have many shared components.

Kyosho* takes this new racing segment very seriously, and its latest release—the 1/10-scale Thunderbird stocker—provides gas enthusiasts with a design that's easy to work on and a strong performer.

The T-Bird is based on Kyosho's venerable Ultima chassis. This chassis has been around for as long as I can remember; you can get a lot out of a well-proven, solid design.

ASSEMBLY

The first thing you'll notice when you open the box is a rather imposing hunk of milled aluminum (the heat-sink cylinder head for the O.S. CZ-R .12

engine) on the chassis—right where you'd expect to put that hot new Panasonic pack you just bought! Hey, wait!—this thing also has a pull-starter, a neat little fuel cell, a carburetor and this itty-bitty glow plug...it's beginning to sound like a whole bunch of work just for a few minutes of fun.

I've always been a fan of Kyosho products for their high quality, simple assembly and

SPECIFICATIONS

ManufacturerKyosho
 TypeOn-road gas
 Scale1/10
 Price\$399.95

DIMENSIONS:

Overall Length18.75 inches
 Width9.75 inches
 Wheelbase10.5 inches
 Front Track7.75 inches
 Rear Track8 inches

WEIGHT:

Gross2.9 pounds

BODY:

TypeNASCAR T-Bird
 MaterialPolycarbonate

CHASSIS:

TypePan
 MaterialAluminum

DRIVE TRAIN:

PrimarySpur/pinion
 TransmissionBelt/gear
 DifferentialGear
 Bearings/BushingsBronze bushings

SUSPENSION:

Type (f/r)A-arm
 Damping (f/r)Oil-filled, coil-over shocks

WHEELS:

Type (f/r)One-piece
 Dimensions (DxW) (f/r)2.95x1.25 inches

TIRES:

Front/RearGreen dots

POWER:

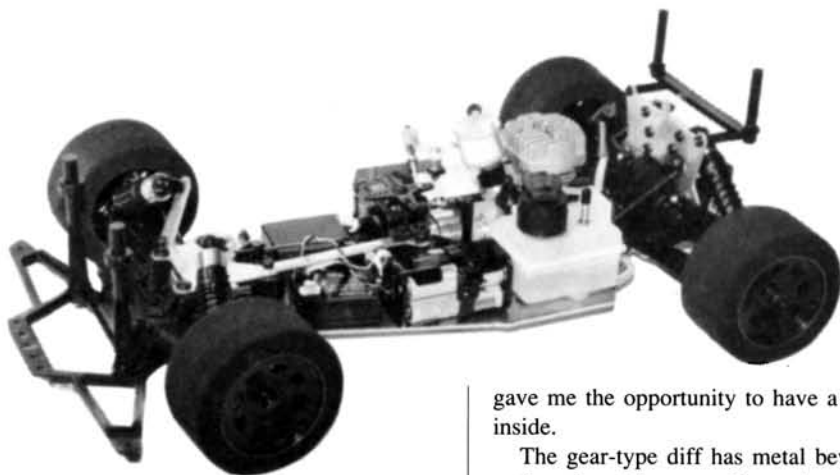
EngineO.S. CZ-R .12
 Carburetor2BK
 PipeKyosho CZ-R

OPTIONS AS TESTED:

Futaba PCM radio and receiver, two S-148 servos; DuraTrax CZ-R slide valve carb.

COMMENTS:

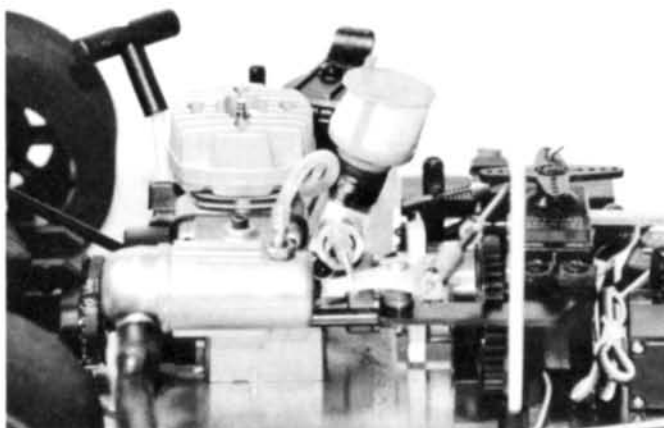
This car is a real kick to drive: low-maintenance vehicle with high entertainment value. It comes mostly assembled, so you'll be up and running in no time. There are also many after-market speed products available for it. It's easy to operate and has a longer run time and performs better than many electrics, so it's an attractive addition to any R/Cer's arsenal. I think that 1/10-scale gas will have its own event schedule soon.



Although it's similar to the Rampage, Kyosho's T-Bird chassis is lower to provide clearance for the body.

detailed instruction manuals, and this kit was no exception. Everything was arranged neatly in the box; the smaller parts were packed in numbered bags for ease of identification. The chassis was partially assembled, and this aided in the building process.

Having built a number of similar Kyosho products, I assembled the front bulkhead and the suspension basically from memory. The only minor changes were the addition of



I replaced the stock rotary carb with a DuraTrax slide carb. It gives smoother throttle response.

brackets to the A-arms and redesigned shock towers that changed the angle of the shocks. These modifications lowered the chassis and provided clearance for the NASCAR-style body.

The rear bulkhead and the transmission, however, are quite a departure from what I'm used to working on. Actually, Kyosho has already done the work for you: the whole rear end—transmission, brake system and bulkhead—comes assembled. Even the engine has been installed. The rear end contains bushings, though, so I disassembled it to replace them with bearings. This also

gave me the opportunity to have a look-see inside.

The gear-type diff has metal bevel gears and a nylon drive gear. Power is transferred from the centrifugal clutch to the rear gearbox by way of a spur gear, a drive shaft and a belt-drive system that appears to be simple yet effective.

After I had added Kyosho's Kelron shocks, full bearings, radio gear and tires, there wasn't much left to do. I took my time installing the radio gear (two Futaba S-148 servos) and setting up the throttle and brake linkage. There's a host of after-market products for this unit, but I opted just to replace the carb with a DuraTrax* slide-valve performance carb kit. It's supposed to increase

throttle response and run much more smoothly than the stock unit. It also comes with a linkage kit that simplifies installation.

I also took some time to remove the engine and add thread-locking compound to anything that even remotely looked like it could vibrate loose! There's nothing more embarrassing than having something fall off your car. Know what I mean?!

The kit comes with a detailed T-Bird body that I painted vaguely like the design on the box. It also comes with a set of Autographics decals that completes the entire NASCAR package. With the preliminaries out of the way, it was time to test!

ROAD TEST

I did something that I honestly don't usually do. I read the instructions! I know, you think instructions are for wimps. Actually, it makes a lot of sense to take your reading glasses along to the track and spend some time going over how to set-up, prime and

(Continued on page 86)

Questions about your subscription to RADIO CONTROL CAR ACTION?

Call toll-free
1-800-877-5169

Radio Control
CAR ACTION

THE WORLD'S PREMIER R/C CAR MAGAZINE
P.O. Box 427, Mt. Morris, IL 61054

Boca BEARING

One of the Largest Inventories of
Miniature Bearings for Remote
Control Models –

Cars • Trucks • Engines • Boats • Planes • Helicopters

■ 3 Complete Product Lines

- Premium Ultra-Seal frictionless sealed maintenance-free bearings
- Econo-Power bearings, precision-engineered for strength and durability
- High Speed, high heat engine bearings

■ Huge Inventory of Standard U.S. and Metric Bearings

- Low Prices, Fast Delivery
- Toll-Free Number for Easy Ordering
- Dealer Programs Available

Ask for Boca Bearings at your local hobby shop,
Or Call (407) 998-0004

Toll-free U.S.A. (800) 332-3256

Toll-free Canada (800) 553-3256

Or Fax Your Order: (407) 998-0119

Or send \$3.00 for our catalog

Your Name _____

Address _____

City _____

State _____

Zip _____

Send to: Boca Bearing Dept. A • Suite 2304

7040 W. Palmetto Park Rd. • Boca Raton, FL 33433

THUNDERBIRD

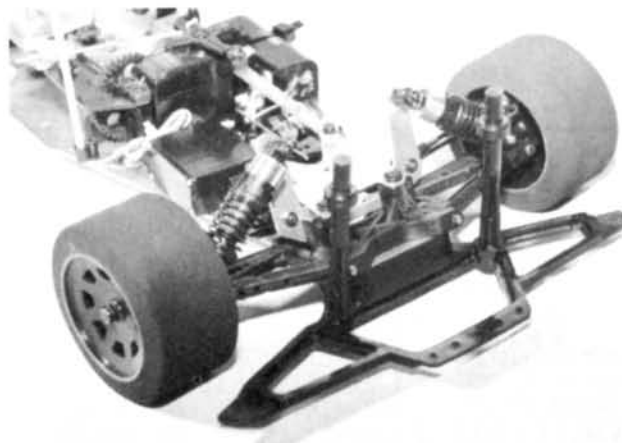
(Continued from page 83)

store your gas car.

With fuel bottle, glow-plug battery and trusty Futaba* PCM in hand, I was off to the local industrial park for the T-Bird's initial break-in. I took one of my gas buddies along in case things got out of hand.

With the fuel cell topped off, the receiver pack turned on (very, very important!) and the glow-plug clips in place, I gave the t-handle a gentle tug and...nothing happened. (I forgot to prime the engine!) After I had primed the carb, I gave the t-handle another couple of yanks and the little 2-stroke came to life.

I set the car on a small wooden block with its wheels off the ground. I set the carb adjustment slightly on the rich side. It's highly recommended that you run the first few tankfuls this way so that the internal



The slightly limited independent front suspension provides ample damping for bumpy parking lots.

This is a pretty impressive car to drive, not only because it's gas-powered, but also because of its handling. Having a full suspension adds a whole new perspective to setting up a car with this much power. Throttle-induced over-steering and the smell and sound of nitro power, can and does have an overwhelming effect on the senses. The thought of going head to head with other NASCAR-bodied gas cars has some real appeal to it.

FINAL COMMENTS

The Thunderbird is a great first step in gas R/C. Kyosho has invested a lot of time, money and effort getting the word out and I've jumped on the

bandwagon. There's no need to fear the expense that's associated with other forms of gas racing: you can add this car to your R/C arsenal and still have money left over for lunch.

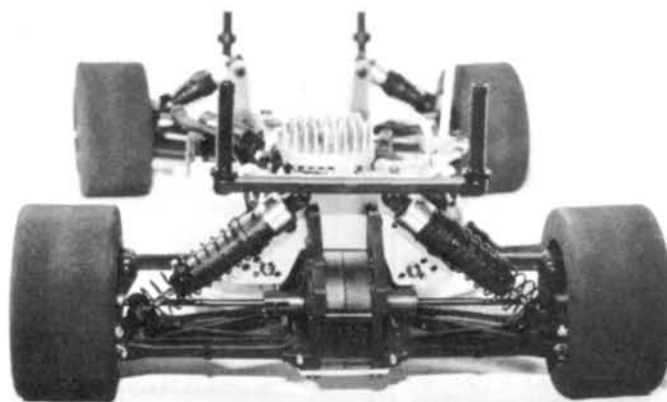
Now I can't wait to hit the after-market catalogues and turn this rig into the next Lethal Weapon. Stay tuned, this could get very interesting.

**Here are the addresses of the companies mentioned in this article:*

Kyosho/Great Planes Model Distributors, P.O. Box 4021, Champaign, IL 61824.

DuraTrax: distributed by Great Planes Model Distributors.

Futaba Corp. of America, 4 Studebaker, Irvine, CA 92718.



An enclosed gear diff delivers the power to the rear wheels. Strong composite wheels with foam tires provide great traction on most surfaces.

parts can become lubricated and seated properly. Failure to do so will cause premature engine failure!

When everything was in running order (the carb requires many adjustments, so take your time), I ran it at half throttle to get a feel for the handling and power. I left the body off in case I had to make any quick adjustments. My first impression was that this would be a whole lot of fun after I had everything up to speed.

I spent an hour or so that night checking out every nut and bolt to make sure that the car was mechanically sound. With equipment in tow, I returned to the lot the next day and hit the pavement

by STAN VanDRUFF



NO ONE HAS to tell you that R/C trucks are hot. Good looks, ground clearance and awesome handling make trucking a blast. If you've been waiting for just the right kit to get you started in R/C trucking, your wait is over. From the first time I drove Futaba's* new FXT, I was hooked!

Futaba's venerable FX10 has been around for years, and many of us were weaned on it. Although Futaba considers the FXT an entry-level kit, it's a high-quality kit that has much wider appeal than the FX10. Despite its low price, the FXT is packed with fun and performance.



The FXT comes with a gorgeous Mazda body and rolls on the coolest-looking 2.2 inch rims around. The stock tires have an innovative spike/X-pattern combination in the rear and a spike/rib combo up front. The transmission uses the same housing as the FX10, but it hides a competition-type ball diff inside.

The tranny and ball diff perform well, but Futaba limits your choice of gear ratios. Four available pinions yield ratios that range from 9.50:1 to 10.94:1—fine for off-road, but low for a dirt oval. (The 23-tooth pinion that comes with the kit provides a 9.50:1 ratio.)

Damping on all four corners is provided by identical plastic oil-filled shocks; they don't leak, and they do their job well. O-ring bumpers on the shock shafts moderate the front sus-

FUTABA FXT



PHOTOS BY STAN VanDRUFF

pension travel. The shock towers are made of unusually thick (0.090 inch) black fiberglass that looks just like graphite.

The front and rear suspension arms are made of hollow nylon halves. When assembled, they're light, and they don't have crevices in which mud and dirt can accumulate. The new chassis is a beautiful black-anodized aluminum tub that could be mistaken for that of an RC10.

Low-buck racing truck

THE KIT

Futaba has designed an excellent kit with strong, durable parts (aluminum shock bodies would be better, though). Despite the large number of parts it contains, the assembled truck is very light. The kit comes with a body, a motor, shock oil and metric tools, but a battery and a speed controller aren't included. The parts are grouped into plastic bags, but the groupings aren't very well organized. (I had to open four bags just to build the servo-saver in Step 1.)

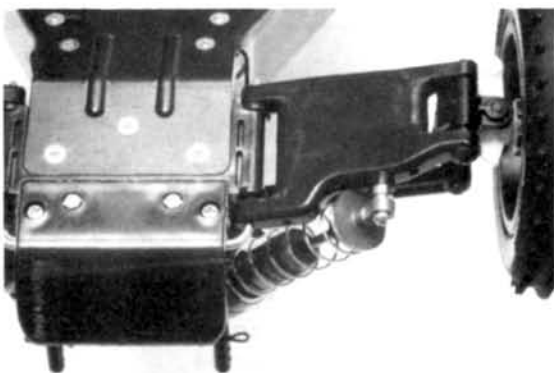
Clear, logical directions complement dozens of excellent photos in the instruction manual. The plastic parts have numbers molded into their trees that



match the numbers on the manual, and, if you need them, there are drawings of the parts (grouped by bag name) in the back.

GETTING READY

Start organized. Scan the manual to familiarize yourself with the assembly order. Clear plenty of work space, and round up your tools. You'll need no. 1 and no. 2 Phillips screwdrivers, long-nose pliers and a sharp hobby knife (to remove the plastic parts from their trees). Futaba thoughtfully includes a hex wrench for the pinion and a four-way socket wrench.



Everything on the FXT fits together hand-and-glove. Futaba didn't design this overnight!

You'll need "non-permanent" thread-locking compound to keep the nuts from vibrating loose—either that, or you'll need a bunch of spare nuts.

Many bags will be open at once so, to prevent confusion, arrange them in some kind of order on your table. (I took the screws out of their bags and sorted them into the compartments of an egg carton.)

I took my time and spent about four hours putting the kit together. Futaba was kind enough to provide me with a painted body; you'll have to set aside a little more time to paint and trim yours.

(Continued on page 94)



SPECIFICATIONS

ManufacturerFutaba
Type2WD racing truck
Scale1/10
Price\$199.95

DIMENSIONS:

Overall length16.5 inches
Width12.25 inches
Wheelbase11 inches
Front track10 inches
Rear track10.125 inches

WEIGHT:

Gross (with battery)3 pounds,
13 ounces

BODY:

TypeMazda stadium truck
MaterialPolycarbonate

CHASSIS:

TypeOne-piece tub
MaterialAluminum

DRIVE TRAIN:

PrimarySpur gear
TransmissionGear
Differential(s)Ball
Bearings/BushingsNylon bushings

SUSPENSION:

Front/Rear: TypeIndependent
A-arm with upper control links
DampingOil-filled,
coil-over shocks



The underside is as smooth as an airplane skin. Notice the wide, strong control arms. The unusual tires perform quite well.

WHEELS:

Front: TypeOne-piece nylon
Dimensions (DxW)2.2x1.75
inches
Rear: TypeOne-piece nylon
Dimensions (DxW)2.2x2.0
inches

TIRES:

FrontRib/spike
RearSpike/X-pattern

ELECTRICS:

MotorRS540
BatteryNot included
Speed ControllerNot included

OPTIONS AS TESTED:

Futaba Magnum Sport Radio with an MC210CB ESC, Twister Pocket Rocket stock motor, Holeshoot motor heat sink, ball bearings.

COMMENTS:

If you've been waiting to get a truck, don't wait any longer. I couldn't believe how well the FXT handled. It's unbeatable for backyard driving and, with the right motor, the FXT can take you into competition on a limited budget.

FRONT END

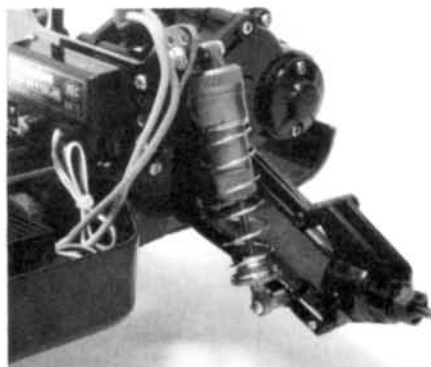
I followed the manual pretty closely. Start at the front of the chassis with the steering servo. Nothing difficult here, but when you bolt the steering servo to its mounts, be sure to use the upper set of holes or the tie rods will bind.

Finger-tighten all the mounting bolts for the chassis plate and the front suspension arm. When everything is in place, tighten them all down. The brass sleeve that was used as a hinge on the front upper plastic control arm fit too tightly for my taste. I drilled out the hole in the arm with a no. 20 (0.161-inch) drill bit, and now the joint is silky smooth.

TRANSMISSION

The heart of the tranny is the ball diff. Diffs have so many parts that keeping everything in place is a challenge. Clean off your work area before you start to assemble the tranny so that you won't lose the tiny balls. The holes in the diff gear and the thrust retainer are tapered.

4mm step bolt so that its threads point up, then drop on the large disk springs, the thrust washer, the thrust retainer (with balls), the other thrust washer and the small disk springs. When you get everything on, go to Step A. Drop on pressure plate A, the thrust washer, the diff gear (with balls), and the other thrust washer. Then, screw on pressure plate B. Tighten the assembly, and add the pressure-plate cap last. Finally, put a little



sander to remove about ten-thousandths (0.010) of an inch from the two gear surfaces shown in the photo, (far left) and it made a big difference.

REAR SUSPENSION

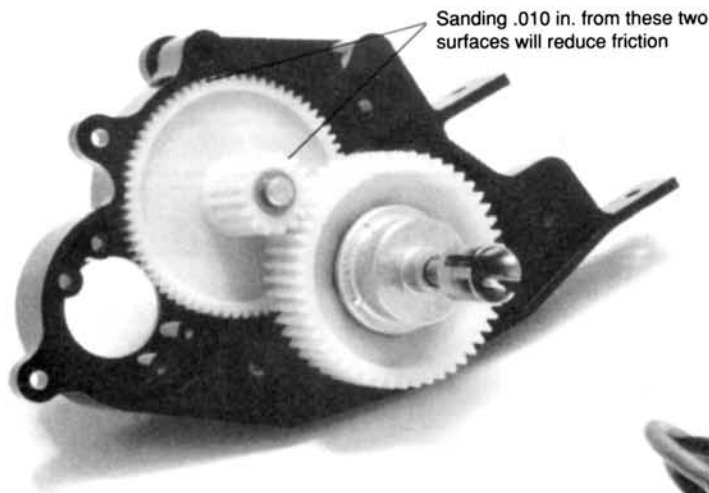
The rear shock tower will fit two ways, but bolt it on so that the countersunk side of the center hole faces forward.

The front and rear control arms hinge on nifty screw pins, but the rear pins started to back out before I had run through the second battery pack. If you attach the rear control arms to the suspension arm mount *before* you bolt the mount to the chassis, you can put the screw pins in from the front instead of from the rear. They won't loosen as quickly that way, and the upper ones can't possibly fall out.

SHOCKS

The kit comes with a variety of shock pistons. Start with the recommended two-hole pistons, but you can experiment with the one-hole pistons later for more damping. When you trim them from the tree, be especially careful not to leave any burrs or nick their edges.

Before you slide the piston shaft into the shock body, put a little oil on the shaft's threads. This will let you slide the shaft through the O-rings without nicking them.



Clockwise from top: the shock towers are made of unusually thick black fiberglass. You'll never break them. Spring compression is adjusted by inserting spacers on top of the spring (1/16-inch spacer shown). The front shock tower is well-designed and durable. The FXT comes with some nice touches such as this four-way socket wrench and spare parts. This motor plate has four pairs of holes, so pinion spacing is precise. The down side is that only four pinions will fit. This new diff works smoothly, and the tranny gears are huge! They can take a lot of abuse, but they might fit a little too snugly.



Apply plenty of diff grease to the larger side of the holes before you add any balls. Yes, grease is a lubricant, but it's sticky enough to keep the balls in place during assembly.

I had trouble putting the diff together according to the directions. If you want to do it the easy way, start with Step B and build the diff "upside-down" (in reverse) from what's shown in the manual. First, hold the

grease on the gear teeth to quiet the tranny and help the gears break-in.

The transmission seemed stiff, but I couldn't find anything wrong with it. Later, at the track, the truck wasn't as fast as I had hoped it would be, and the motor became hot. Under load, the tranny gears rubbed against each other slightly, and one gear rubbed against the side of the case. I used a belt-

RADIO GEAR
I installed a Futaba Magnum Sport receiver and ESC to control the truck. To reduce glitching, I always put the receiver on the shock tower. Luckily, the FXT has a wide, smooth tower, and I mounted the receiver on it with Velcro®. (Velcro® also holds the ESC in the pan.) A nylon tie-wrap secures the switch to the top of the steering servo, where I can reach it from under the front fender.

By the way, if you use a Magnum Sport radio, Futaba leaves you on your own to figure out how to hook the ESC to the motor. Here's how: orange goes to (+) on the motor and blue goes to (-).

(Continued on page 138)

Combust



Dodgeon Racing Gas rc10T

by FRANK MASI

com

ion



ONE-TENTH-scale gas racing could very well be the wave of the future. Motor and battery "wars" between manufacturers have soured many once-enthusiastic electric racers—and they're looking for alternatives.

One-tenth-scale gas cars and trucks are nothing new; they've been around for years, but they've been considered oddities, not serious racing machines. This isn't necessarily the case today. Serpent's Impact racing cars and Kyosho's new Thunderbird stock car are evidence that some manufacturers take this segment seriously but, for now, most companies are waiting to see what the demand will be.

Rather than wait for the manufacturers to produce gas versions of sophisticated electric off-road racers, Kunio Dudgeon has taken matters into his own hands. The result is one of the most innovative projects that I've seen to date—the Dudgeon Racing Gas RC10T.

PROVEN TRACK RECORD

Kunio's gas conversion isn't just pretty; he raced it at both the '91 Kyosho World Challenge and at the Kyosho/Car Action Southeast Gas Off-Road Challenge. I had the chance to drive it at the Off-Road Challenge, and take it from me, it's awesome! It handles almost exactly the same as an electric RC10T, but its sheer speed combined with the sound and smell of its gas engine will blow you away!

(Continued on page 103)



conversion

The RC10T's front suspension remains intact, but it's now bolted to Kunio's scratch-built aluminum chassis and fiberglass upper radio plate.

(Continued from page 99)

THE CHALLENGE IS MET

In late June '91, Kunio saw an entry form for the Kyosho World Challenge race. It was to be held at Hobbico headquarters in Champaign, IL, and in addition to the 1/8-scale buggy class, it would include a class for 1/10-scale gas-powered trucks.

Kunio was determined to build a truck for this race, and he wanted to base it on Associated's* brand-new RC10T. The kits were hard to come by, but he ordered one. He mounted a new O.S.* Max CZ-R .12 engine on an RC10 aluminum tub chassis,

hooked it up to a Stealth tranny and waited eagerly for his RC10T kit to arrive.

One week before the race, the kit arrived and Kunio began thrashing it. He managed to place second in the A-Main, but he still wasn't completely satisfied with his conversion.

SCRATCH-BUILT MARVEL

The RC10T conversion that graces these pages is the latest version of Kunio's dream. When I saw this truck in Georgia at the Off-Road Challenge, I knew that *Car Action's* readers would want a closer look.

CHASSIS

To the stock RC10T kit, Kunio added an aluminum plate chassis that had been machined to accommodate the engine mounts. He lightened the chassis by milling some of its material

(Continued on page 104)

List of Equipment

- Airtronics 94143 servo (throttle/brake)
- Associated RC10T kit
- Bru-Line* proof switch
 - silicone connector for header
- Du-Bro* fuel filter
- DuraTrax heat-sink cylinder head
- Fox* glow plug with idler bar
- Futaba* Magnum Jr. radio
 - 9401 steering servo
- Kimbrough* Heavy-Duty servo saver
- Kyosho header
 - flip-up cap
 - fuel tank
- Losi* Radius ribbed front tires
 - mini-pin rear tires
- Lunsford* titanium turnbuckles
- McCoy MC2000 tuned pipe for .21-size engine
- MIP* ball-bearing bell crank
 - steering kit
 - blue O-ring for shocks
- O.S. Max CZ-R .12 engine
- Omega* 15-percent-nitro ("Pink") fuel
- Robinson* titanium ball links
- RPM rear bulkhead
 - body post
 - shock collars
 - front (nose) skid plate
 - 3" suspension blocks
- Sanyo 650mAh cells for receiver pack (5)
- Tecnacraft* titanium turnbuckle
- Tekin* AM micro receiver



The MIP ball-bearing steering kit for the RC10T provides accurate, slop-free steering. Kunio machined aluminum stand-off posts to secure the upper and lower chassis plates.



A Kyosho flip-up fuel cap facilitates quick fill-ups. A tie-wrap handle protrudes from the body so the pitman can easily refuel the truck during a race.

A gas truck of your very own!

Kunio is building a limited number of gas conversion kits for the RC10T and the Team Losi LX-T—special orders only. The kit costs \$150, but if you send him your RC10T or LX-T, an O.S. CZ-R engine and \$200, he'll send you a complete, ready-to-run gas truck. Kunio

says that the prices are subject to slight changes, depending on the availability of the parts he needs to make the conversions.

To inquire, call RC Motorsports at (913) 383-9481, Monday through Saturday, 12 to 7 p.m.

KD Racing conversion kit:

- 3/8x5/8-inch ball bearing (for inner slipper hub)
- 7075 .100-inch-thick T-6 aluminum chassis
- Associated clutchbell (14T) with three-piece clutch shoes machined to take an O-ring.
- Machined Associated RC500 spur gears (58T, 61T, 63T)
- Machined Delrin transmission cases with aluminum brace
- Machined idler gear shaft with gear installed
- Machined Kyosho flywheel to fit Associated clutch.
- Machined one-piece T-6 aluminum motor mount with adjustment plate
- Pilot shaft with ball bearings
- Radio tray with aluminum stand-off posts
- Spur gear hub/brake drum with brake band kit
- Throttle and brake-linkage kit
- Transmission (to rear bulkhead) brace

Gas RC10T

(Continued from page 103)

away, and he cut an access slot to allow the use of an external electric starter. He installed a fiberglass upper chassis/radio tray to increase chassis strength, and he secured the tray to the lower chassis plate with aluminum stand-off posts

and attached it to the front shock tower with a custom mount.

TRANSMISSION

The trickiest part of Kunio's truck is its scratch-built tranny. Kunio's goal was to build a tranny that allows him to use the large spur gear from Associated's RC500 1/8-scale car. He machined the case out of Delrin and made an idler gear shaft to accommodate the Stealth's main diff gear. A scratch-built, one-piece aluminum brace that links the gearbox and the main chassis increases rigidity.

He kept the Stealth's slipper clutch, and inserted a unique, spur gear hub/brake drum between the slipper and the gear.

A brake band encircles this hub and is actuated by the Airtronics* 94143 throttle servo that's mounted on the upper radio tray.

Finally, a custom aluminum tranny brace/radio-switch mount links the gearbox and the RPM* RC10T rear bulkhead, which is "turned around" on the chassis.

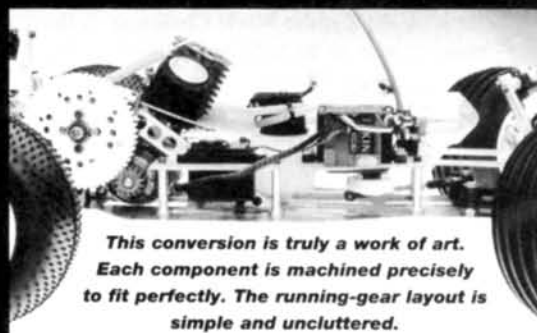
Kunio Dudgeon's interest in gas-powered R/C started a few years ago when he bought a Kyosho Assault. Although he enjoyed driving it, he began to envision ways in which he could improve the handling of his rear-engine nitro-burner. Soon afterward, only the original transmission cases were left. He had scratch-built the rest of the Assault using RC10 suspension pieces.

A Kyosho Burns was the next addition to Kunio's gas stable. According to Kunio, "It was fast and exciting and made me hungry for more nitro action."

When his scratch-built Assault became...er...disabled (his wife ran it over with her van), Kunio's active imagination went

ENGINE

Kunio mounted his O.S. Max CZ-R .12 engine on the chassis with a scratch-built, one-piece aluminum adjustment plate. He machined a Kyosho* flywheel to accept an Associated clutch bell, then he machined the

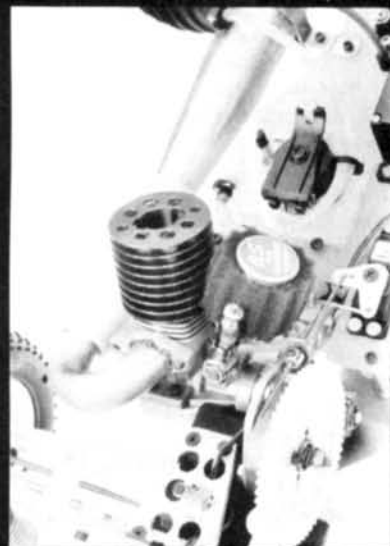


This conversion is truly a work of art. Each component is machined precisely to fit perfectly. The running-gear layout is simple and uncluttered.

Associated clutch shoes to accept an O-ring instead of a spring.

A Kyosho header manifold links the engine to the pipe—a McCoy* MC 2000. To keep the engine cool, Kunio installed a DuraTrax* blue-anodized heat-sink cylinder

(Continued on page 146)



The powerful O.S. Max CZ-R .12 is nestled neatly between the fuel tank and the scratch-built transmission. A spur gear hub/brake drum w/brake band encircles the Stealth's slipper clutch.



The RC10T rear suspension has been "turned around" to accommodate the new tranny. Five Sanyo 650mAh cells power the radio system.

Gas

back to work. While looking through some spare parts for his Burns, he began to wonder how he could mount a Burns spur

gear on the Stealth transmission in his RC10. Soon, he had made a gas-powered RC10 sprint car.

The sprinter performed well, but Kunio noticed a few bugs that he had to iron out. The Burns spur gear was too large, and it rubbed against the dogbone when the suspension was fully compressed. To cure this,

Kunio moved the transmission forward slightly, but this altered the angle at which the dogbone was attached to the rear hub and made the car squat under acceleration—things to remember for future projects.

Roots

drive-in graduate is for you. Just listen to that Hemi!

*Here are the addresses of the companies mentioned in this article:

Parma Int'l Inc., 13927 Progress Pky., North Royalton, OH 44133.
JR Propo Remote Control; distributed by Hobby Dynamics, P.O. Box 3726, Champaign, IL 61826.
Tamiya America Inc., 2 Orion, Aliso Viejo, CA 92656-4200.
Novak Electronics Inc., 128-C E. Dyer Rd., Santa Ana, CA 92707.
Futaba Corp. of America, 4 Studebaker, Irvine, CA 92718.

Trinity Products Inc., 1901 E. Linden Ave. #8, Linden, NJ 07036.

Robinson Racing Products, 165 N. Malena Dr., Orange, CA 92669.

Motion Graphics, 2645 Robert Arthur Rd., Westminster, MD 21157.

PROJECT IMPACT

(Continued from page 52)

through medium or large corners and chicanes. It holds the corners like Marla Maples holds on to Donald Trump's Gold Card. The updated suspension and diff give the car a tamer, more responsive feel. You can really put this baby where you want it. Most of all, there's no substitute for the sound of a nitro-powered engine growling off the starting line! Although the car still "pushed," (even with the rear sway bar), softer front or harder rear tires should easily correct this small problem.

Small series of Impact races have already sprung up from coast to coast, and it's no wonder: this car can really "redline" your racing threshold. As the class grows, more after-market parts will certainly make the scene. Only time will tell what kind of impact 1/10-scale gas racing will have on racers everywhere.

*Here are the addresses of the companies mentioned in this article:

Serpent; distributed by R/C Motorsports of Miami, 4715 NW 157th St., Ste. 204, Miami, FL 33014.

Tecnacraft, 1335B Dayton St., Salinas, CA 93901.

Associated Electrics Inc., 3585 Cadillac Ave., Costa Mesa, CA 92626.

Paris Racing, 4254 Independence St., Chino, CA 91710.

O.S.; distributed by Great Planes Model Distributors, P.O. Box 9021, Champaign, IL 61826.

DuraTrax; distributed by Great Planes Model Distributors.

Parma Int'l Inc., 13927 Progress Pky., N. Royalton, OH 44133.

Bich'n Bodies, 4903 Cloverfield Rd., Pearland, TX 77584.

PROJECT RC10L

(Continued from page 65)

very quickly, yet smoothly. I attribute its smoothness to the Pro Flex rear end. The eventual solution to my shock problems was 20WT oil, with a black, light-tension, suspension spring in place. The front end was dialed-in just a little, finishing with 2 degrees of caster and 1 degree of camber.

So then how did we do? The track record is 24 laps at 4:04, and the Project 10L car was competitive—22 laps and 4:01 in the first outing.

I hate to evaluate a car by myself, and I value the opinions of others, so invited a few

(Continued on page 121)

Catch..... THE INSIDE LINE

High performance racing products

Aluminum Split axle front ends.

FEATURES INCLUDE:

- Light weight
- Quick change half axles
- Independent CASTER/CASTER Adjustment
- Adjustable WIDTH
- Convert wide to NARROW

NEW SWAY BAR KITS WITH BUILT IN WING MOUNT.

ALUMINUM SUPER LIGHT HUBS \$29.99 A PAIR
 Other parts & supplies available
 Send \$2.00 & Legal Env for catalog



#2201 10L #2201S 10L S.S. #2202S LYNX II S.S. #2203 12L
 #2202 LYNX II/PRO 10

COMPLETE KIT INCLUDES:
 All parts plus 4 half axles - 0, 1, 2, 3, degree
 FOR \$65.95

COD available, or send check, money order (plus \$5.00 shipping) to:

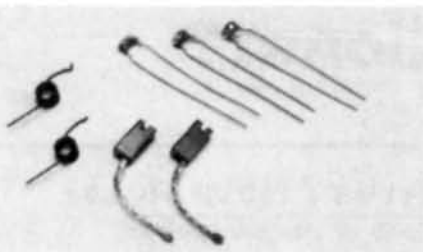
THE INSIDE LINE

12859 Rt. 108 • Highland, MD 20777 • (301) 854-2701

• DEALER INQUIRIES INVITED •

★ New High Performance ★ Motor Products from Team Class!

Oval Performance Kit — #7502 — used by Chris Schneider to win the stock division at the Michigan 500. This kit contains super heavy black brush springs and a pair of our legendary soft Venturi brushes. Also included are three high frequency capacitors for your motor. Retail \$6.99.



Liquid Horsepower — #7505 — used by ROAR National Champions Frank Calandra and Willy Decker. This is a revolutionary commutator and brush additive that leaves the competitors in the dust, searching for speed. Use to clean and condition, as well as power additive. Retail \$4.99.

TEAM Class News

The Spring Thing is here!!

Now available from Team Class is a tool that will allow you to tune your brush springs perfectly. The "Spring Thing" uses an actual motor brush hood to test the spring in its race environment. This handy gauge will correctly measure the tension of various brush springs. It is accurate enough to measure production tolerances in springs of the same type. Get the edge on the competition, ask your dealer for the Team Class "Spring Thing".

Part #6004

Retail Price \$19.95

Greg Klugh Dominates
 the ROAR On-Road Nats
 in Orlando, FL - T.O. + 1st
 1/10th and 1/12th!!

Class Recreational Products

RD #1 Box 187A

Utica, NY 13502

Telephone: (315) 724-8052

Fax: (315) 732-2034





RADIO CONTROL CAR ACTION

RACER NEWS

WORLD CLASS RACING

New Trinity Car Dominates Worlds

After Joel "Magic" Johnson had won all three main events so dramatically at the first-ever IFMAR 1/10-Scale On-Road Worlds with his prototype Trinity ReFlex 10 Road car, fevered, frenzied on-road R/C fanatics began to scream for more information about this unique racer! But it was to no avail, as the prototype was whisked away before the roving X-ray eyes of *Car Action* could dissect it. Rumor has it that production is scheduled to begin soon, and early reports say that the car is more advanced than any other car available. One of the features that sets the ReFlex 10 Road apart is the elimination of saddle-pack batteries. A single row of batteries runs right down the middle of the chassis. Joel won in such a convincing fashion that we know the car must be a screamer. As we get more news, don't worry—you'll hear it!



At the NORRCA Off-Road Nationals held at TK Hobbies in Amarillo, TX, Team Associated driver Brian Kinwald showed that he has the magic touch by winning both the Expert 2WD Modified and Expert 2WD Modified Truck for the second straight year. Right behind Kinwald in 2WD Mod

was Losi's Kyle Reed and Associated's Mark Pavidis. In Mod Truck, 2nd place was Associated's J.D. Beckwith and 3rd was Losi's Jon Anderson. In Expert 4WD Mod, TQ Brent Wallace rolled through to an easy win with his Schumacher Boss Cat. Brent relied on killer driving skills and won all three

main events. Second overall was Beckwith followed by 3rd-place finisher and Peak Performance driver Scott Roberts. This is the first year that NORRCA has used a triple A-Main format; it removed the "luck factor" and required consistent finishes for a top finishing position.

* * *

CONTENTS

114
Lightning
Steady Lift Jr.

Vantage
Digi-Charger

116
IEDA World Drag
Races

122
Speed Shop

125
Stock Motor
Mysteries

128
ROAR Oval Nats



RACER NEWS

Neisinger Wins 3rd World Championship Title EXCLUSIVE INTERVIEW

John Thawley conducted this interview exclusively for *Car Action*, minutes after Tony Neisinger won the 1/12-Scale World Championships.

JT: Well, Tony, how do you feel?

TN: John, I can't believe it! No way I thought I could win. In round three, I went out looking for a clean run and hoped to hang on for second.

JT: Round three has to be the most spectacular race I've ever seen. With that kind of battle on your hands, could you stick to any type of strategy?

TN: Basically, I tried to establish my rhythm. I was determined to make Masami earn whatever he was going to get. I wanted the race to be ultra-clean. It was so much fun to run like that, you know, rubbing and trading paint. But no way did I want to see any intentional wrecks. I hoped that once I got away I could back off, but we had both used up a lot of battery, so it became kind of a chess game.

JT: Tony, we're all really thrilled to see you win and give the U.S. another World Championship title. Please don't take this the wrong way: the system IFMAR uses to score 1/12-scale credits drivers with their best number of laps and times from two of the three A-Main rounds. Other IFMAR events use a

points system based on finishing position alone. Using the points system, Masami would have won. What's your feeling on the system?

TN: I prefer the points, based on finishing position. But no way am I giving up this win!

JT: Absolutely not! You won it by the book. It's all yours. How do you still psych yourself up to come back and keep racing at this level?

TN: I just love racing, and I'm still capable of winning. But you're right: it's tough to get up for it.

JT: What's next?

TN: Off to Pomona to start working on my 1/10-scale car...1/10-scale isn't my strong suit, nor is it my favorite, so I've got a lot of work to do there. After that, I'd really like to make an effort in 1/8-scale gas and take a run at the World Championships. But I'm going to have to find a ride for that.

JT: Tony, congratulations again and thanks for your time. I guess you've got some celebrating to do.

TN: Honest to God, I still can't believe it! Thanks!

After Tony and Masami, the finish order was Mike Blackstock, David Spashett (UK), Joel Johnson, Jose Rosas (France), Steve Radecky, Cliff Lett, Kevin Jelich and Rick Hohwart. Look for full race coverage in the next issue of *Radio Control Car Action*.



IT'S A MAGIC WORLD

Joel "Magic" Johnson won his second IFMAR World Championship in 1/10-Scale On-Road at the Ranch Pit Shop in Pomona, CA. After a disappointing 5th-place finish at the 1/12-Scale Worlds in Grand Rapids, MI, the week before, Joel pulled out all the stops and put his prototype Trinity ReFlex 10 Road car on the pole after the first day of qualifying.

Tyree Phillips of Trinity and Novak placed his 10L, equipped with the new Associated front end on the pole the second day of qualifying, and on the last day of qualifying, Associated/Reedy driver **Mike Blackstock** took his 10L (also equipped with the new front suspension) to the TQ position. Also qualifying for the A-Main were Ralph Burch, Bobby Horan, Tony Neisinger, Mike Swauger, Ron Schurr, Jay Halsey and Barry Baker. At the start of the mains, Joel Johnson took off and wasn't seen again until he pulled into the victory lane after **winning all three A-Mains!** Second went to Joel's teammate Tyree and 3rd to recent 1/12-Scale World Champ Neisinger. The rest of the order was Blackstock, Halsey, Burch, Swauger, Horan, Schurr and Baker.



'92 ROAR Off-Road Nats

PREDICTIONS, WHO TO WATCH, AND INTENSE HEAT!

The ROAR Off-Road Nats in Dallas, TX, are coming around the corner as quickly as an RC10 headed for a turn marshal's ankles! Who's going to take the big win and who's going to flounder miserably? It's up to us to provide all the **tension** and **drama** (at least off the track) as we head into the biggest off-road race of the year. Without further ado, here are some quotes from some of the top racers slated to visit Norm's facility on **August 7th, 8th and 9th.**



CLIFF LETT

Cliff Lett, 2WD and 4WD Modified

Predictions: Judging from what other people who have been to this race before have told me, it doesn't sound like the ideal conditions for

racing a national. It's not air-conditioned, and I've heard that it gets to be over 100 degrees in there.



BRIAN KINWALD

Who to watch: If I had to give the edge to someone, I'd give it to Brian Kinwald. Obviously I'd like to win, but Brian is coming off a couple of big wins, and so far he's the best prepared. He's spending the most time at the track, and it's paying off.

Mike Dunn, 2WD Stock and Modified

Predictions: The weather is going to be hot, and the competition is going to be the same. The one who puts in the most work, it'll pay off for them. Kyle (Reed) is going to be my toughest competitor, even though he's my teammate. At

least until the A-Main, that is.



JON ANDERSON

Who to watch: Definitely watch for Brian Kinwald and Jon Anderson. They're two of the most dedicated racers out there.



KYLE REED

Kyle Reed, 2WD Stock and Modified

Predictions: This race is going to be tough! It's the biggest race of the year, so everyone will be prepared. The track is really demanding too. The conditions will test your patience...it's going

to be miserable.

Who to watch: Look out for Jon Anderson, Brian Kinwald, Greg Hodapp and me. Also, you can't count out Cliff Lett, Jack Johnson and Jay Halsey.



JACK JOHNSON

Jack Johnson, 2WD and 4WD Modified

Predictions: It's gonna be hot and dusty. It should go well unless we're cramped for pit space. I haven't really concentrated on 1/10-scale off-road as much lately. I've been focusing all my driving skills on 1/8-scale 4WD off-road. I think I'll be a top-five finisher in Texas, though.

Who to watch: In the 2WD class watch out for Bryan Peterson and Jon Anderson. In the 4WD class, the ones to watch are Carlos Gonzales and Kris Moore.

Traxxas Stages French Invasion

Overseas in Plouay, France, Traxxas dominated the first three places in the A-Main of the **French Nationals** with TRX-1s. Also abroad, at the 1992 **New Zealand National Championships**, Traxxas TRX-1

drivers **Julian Hardy** and **David Bromley** took top honors in the stock 2WD and modified 2WD classes respectively. Bromley had only begun to race his Traxxas shortly before the competition. The popular

TRX-1 holds national titles in **Australia** as well.

Back on the homefront, Traxxas-sponsored racer **Kyle Simmons** TQ'd and won Region 8 with his TRX-1. With this big showing Kyle is now qualified for the Worlds.

So there you have it, R/C fans, the latest scoop! We'll bring you an in-depth look at the **Texas "Chainsaw" Nationals** soon. Stay tuned.





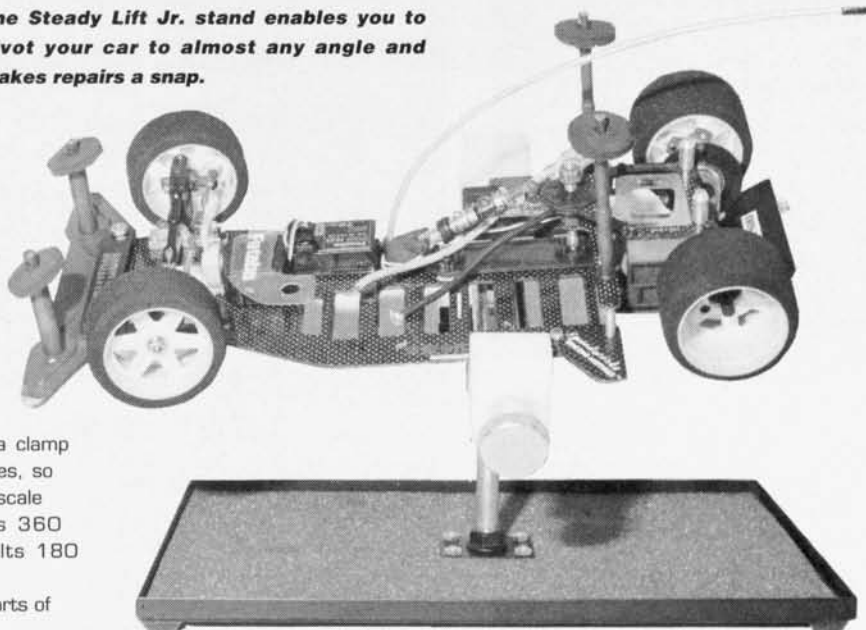
by JIM SHEPKA

MADE OF LIGHT, high-tech materials, the Steady Lift Jr. from Lightning Products* is the perfect stand for your R/C projects.

I assembled it quickly with hand tools; in just minutes I had the lift together and ready to accept almost any chassis. It has a clamp that opens to a width of 8 1/2 inches, so it holds any of my 1/10- or 1/12-scale cars. The upper clamp rotates 360 degrees, and the lower head tilts 180 degrees; this allows you to set the stand so you can reach all parts of the car easily.

Because of its unique design, the Steady Lift Jr. can be mounted on any platform or workbench. The lift comes with a 2-inch extension for the clamp, and Lightning offers an optional 4-inch extension for trucks. The base, a foam-lined tray that's steady regard-

The Steady Lift Jr. stand enables you to pivot your car to almost any angle and makes repairs a snap.



LIGHTNING PRODUCTS

Steady Lift Jr.

less of the work angle, is a great place to hold tools or parts when you're working on your car, and it also catches most dropped screws and other small, easily lost items.

The Steady Lift Jr. is one of the strongest, most versatile car stands that I've seen. I'm so used to fixing my cars on it that I don't go to the track without it!

**Here's the address of the company featured here:
Lightning Products, P.O. Box 1607, Tomball, TX 77377.*

VANTAGE ENGINEERING'S* new Digi-Charge linear Ni-Cd charger monitors voltage and current in both charge and discharge modes.

The Digi-Charge requires a 12 to 16V, 10A, DC power supply (or you can use a high-voltage automotive battery charger with a maximum of 16 VDC). The unit is protected from damage by a 15A in-line fuse. It can peak-charge four to seven cells at a rate of 400mAh to 4000mAh. After the battery has peaked, the charger will automatically switch to the trickle-charge mode.

The Digi-Charge allows you to monitor battery voltage and discharge amps on an LCD screen during discharge. A 5-ohm resistor and diode allow you to dump a pack safely, and they prevent the cell-reversal that over-discharging can cause. I recommend that you use a fan to cool the

unit during this phase, because it gets hot!

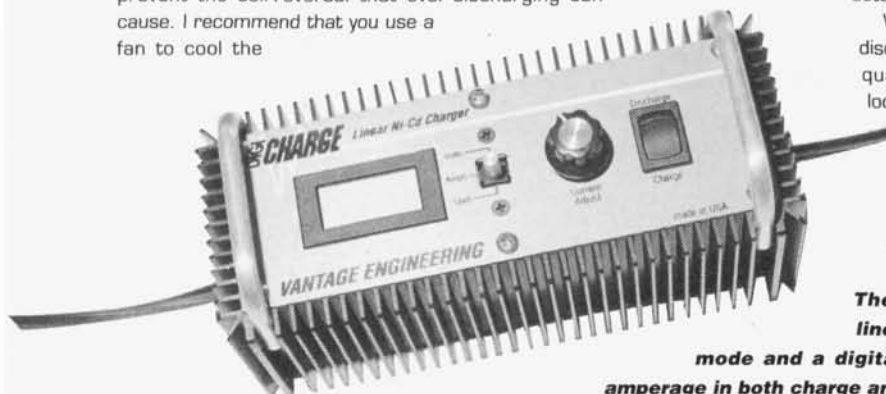
VANTAGE ENGINEERING

Digi-Charge

After a race, you can use a stopwatch to calculate the run time left in your pack by monitoring how long it takes for the pack to discharge to the voltage cut-off point—about 0.9 volt per cell or 5.4 volts for a 6-cell pack. It's a great way to determine the condition of your battery packs and to help you to determine the proper gear ratio for the next race.

With an internal digital meter, its unique built-in discharge features and a one-year warranty, the high-quality Vantage Engineering Digi-Charge is worth looking at.

**Here's the address of the company featured here:
Vantage Engineering, 681 Main St., Waltham, MA 02154.*



The Vantage Engineering Digi-Charge linear charger has a built-in discharge mode and a digital meter that monitors voltage and amperage in both charge and discharge modes.

IEDA WON



Bob Grossman's
Ricky-Smith-style
concours winner.

SO, YOU THINK you've seen fast R/C cars? If you were at the International Electric Drag Racing Association's Second Annual World's Drag Meet, you were treated to the awesome sight of the fastest wheel-to-wheel racing in all of R/C. How about speeds of more than 77mph in less than 1.75 seconds? Competitors from all over the U.S. and even Puerto Rico took advantage of the

airfare wars to converge on K-N R/C Speedway in Stafford Springs, CT, for the big showdown. And the records *did* fall!

Although many still consider it to be a curiosity, R/C drag

racing has enjoyed steady growth over the past couple of years, with most of the activity on the East and West Coasts. This year, the IEDA sanctioned five national events, and it has more than a dozen R/C drag strips listed in the latest *Car Action* Track Directory. The World's was the second event of 1992. (The first race was held at the Clinton R/C Speedway in North Carolina, and the next event is scheduled for Kim's Pit Stop in Totowa, NJ.)

Joe Miano and his incredible 1/4-scale electric rail went 2.65 in exhibition passes and looked totally real as it did its wheels-up launches off the line.



Quartermile smile

WORLD'S DRAG RACES

by MIKE OGLE

Kent Vahlsing's funny car went a record 1.972 forward and also had reverse!



WHO'LL STOP THE RAIN?

Scheduled for June 19 through 21, the World's started on Friday under skies that were threatening heavy rain. This scheduled practice day was interrupted periodically by light drizzle that was just enough to foul up traction and sacrifice a few cars to the guardrail. Some early standout performances were turned in by brave racers, including Minnesota's Kent Vahlsing, whose dragster ran a pair of 1.83-second ETs,

and Fine Design's Terence Holt, whose 10-cell alcohol rail clicked off a pair of sub-2s. His eight-cell pro stocker went 2.00 before punching through the hay bales at the end of the shutdown area. Both of these racers looked like shoo-ins for the win in their respective categories, but in drag racing, anything can happen...and it did!

On Saturday, the skies opened up and K-N R/C Speedway almost became

Puerto Rico's Gerardo Chang Diaz campaigns this winged Oldsmobile.



Rich Roy's "bad" entry looked really good.



Left: "Frantastic R/C's" colorful tow rig. These are showing up more and more in concours lineups!



IEDA WORLDS DRAG RACES

more suitable for drag boats. Anxious racers huddled in their tents and trailers and waited to see if the weather would break in time to allow the scheduled qualifying sessions to get under way. It didn't, so the decision was made to start bright and early on Sunday with two qualifiers and then the actual eliminations. For racers who had already dialed-in their cars, this was great, but competitors who still had to find their combo would have to do so during qualifying.

THE RACE IS ON!

On Sunday, the weather broke and the race was on! The pre-race concours lineup brought out more than 50 of the finest-

Pro Stock, the most popular category on the East Coast, included Terence Holt's newly repaired car that ran a way-below-record 1.998 ET at 66.19mph—good for both ends of the national record.

looking race cars you've ever seen. R/C drag racers are frequently fans of full-size drag racing, and their cars reflect the exotic shapes and paint schemes found in the full-size dragsters. Bob Brossman's replica of Ricky Smith's Pro Stock, complete with full interior and multi-stick transmission, took the top honors, with Ted Connolly's Super-

Comp-style rail and Kent Vahlsing's "Hawaiian Punch" funny car placing 2nd and 3rd respectively.

The cars were called up by class to qualify, starting with the Bracket Racing Class. Just as in full-size drag racing, competitors dial-in their own index time to run against, and the 18-car field featured

dial-in times as low as J. Cordero Lugo's 2.17, with most other dial-ins being the mid-2s to low 3s.

In the Super Stock Class, where the cars are full-bodied, pro-stock types limited to six cells and a stock motor, qualifying was topped by Ricky Blanch's 3.016, followed by Corbitt Marshburn's 3.051 and Phil Salma's 3.081. Larry Laudenklos' 3.13 coupled with a new record 40.58mph was good enough for the 4th spot, and he was followed by Larry Grontham and Bob Brossman.

The Econo-Rails were up next, and these dragsters with seven cells and stock motors were really flying. Ted Connolly knocked out a 2.78 for the top spot, and Phil Salma followed suit with an identical 2.78. The racing would be really close here! Andy Sapoznik, Josh Neely, Jim Edwards and Rich Lacharite rounded out the field.

Pro Stock, the most popular category on the East Coast, included Terence Holt's

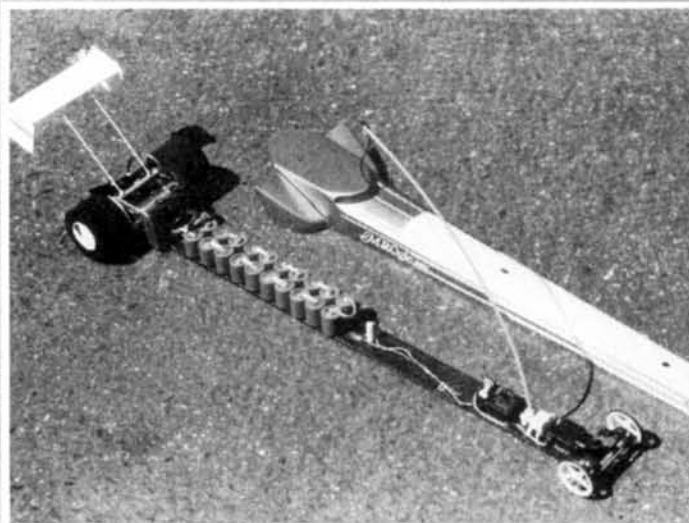
MOST R/C enthusiasts have never had the opportunity to take a good look at a state-of-the-art top-fuel R/C dragster until now!

Obviously, just as with full-

of graphite composite material. They're 22 to 27 inches long (measured from the center of the front wheel to the center of the rear wheel). Early Houge "Illusion" dragster chassis were made of a tapered, U-shaped graphite channel that was very rigid and allowed almost no end-to-end flex. Dragsters such as this one from Fine Design have a lot of flex built into their chassis, and this allows the cars to arch-up under acceleration and load the rear tires heavily for maximum traction.

BATTERIES

An often-heard comment is about "all those little batteries you use." Yes, R/C dragsters carry a lot of cells—in this case, 20 half sub-C, 600mAh Sanyo SCRs. They're still rated at 1.2 volts, and



My runner-up Unlimited Rail is powered by 20 600mAh Sanyo SCR cells. They may be small, but they're still rated at 1.2 volts—the same as the sub-Cs.

**INSIDE A
TYPICAL
TOP FUEL
UNLIMITED
DRAGSTER:**

*It almost looks too
simple to work...
but it hauls!*

size dragsters, their most distinctive features are its long, narrow chassis. These chassis are typically made out of a strip of G-10 fiberglass, or some sort

they're only slightly less punchy (slightly more internal impedance) than the more familiar 1200 or 1400s, but with run times below 2 seconds, we don't need the extra capacity or

the weight of the larger cells. You can add four or five more little 50mAh cells to the total to power the receiver and the servos.



newly repaired car that ran a way-below-record 1.998 ET at 66.19mph—good for both ends of the national record. Also using a Fine Design Cordite motor, Chester P. clocked in at 2.041 for a strong 2nd place, John Bratton went 2.11, and Frank

Martorelli Jr. reeled off a 2.12 for the 4th slot. With only eight cells and modified motors, it's a real accomplishment to get one of these cars to run the course in less than 2 seconds.

The Super Comp cars, which are pretty

much the same as the Pro Stocks, but with up to 14 cells, are a wild, fast class that's most popular in California. Charlie Schaumburg, who won the category in Connecticut last year, qualified 1st with a 2.016, followed by John Evans' close 2.03 and J. Cordero Lugo's 2.05. The 12 cars were within $\frac{3}{10}$ of a second of each other, so consistency was the key to winning this class!

The 10-cell Alcohol Funny Car Class qualified next, and noted oval racer Mark Sanzogni made a 2.105 pass to take the top slot (and the subsequent bye run in eliminations); he was followed by Emanuel Soto and AJ's R/C Allan Hood at 2.185 and 2.252, respectively.

The performance of the Top-Fuel Funny Cars (14 cells and modified motors) rewrote the record books, as Kent Vahlsing's Houge/Astro/ProtoForm Funny broke the existing record with his 1.972-second run at 66.19mph for the top slot. Ron Goca went

SERVOs

The microserves that steer these cars are typically Futaba S-133s—serves that usually find their home in R/C gliders. It probably strains them to steer a car that weighs over 40 ounces, but we're only talking a few degrees left or right and, ideally, you really shouldn't have to do any steering during a run.

MOTORS

The motors used in 20-cell drag racing are unique to R/C cars, but not to R/C airplanes or boats. Long-time R/C hobbyists will recognize the large Astro Flight motor and German-made "Big One" as being electric airplane and marine motors, both with large, beefy commutators, five or seven poles and samarium cobalt magnets. Twenty cells will cook most conventional three-pole motors, or will at least require that they be torn down

after nearly every pass, but these larger motors require much less maintenance for consistent performance. As for gearing, I'll save you the trouble of counting the teeth in the photo. I typically start out with a 29/125 64-pitch pinion-and-spur combo for a 4.32



Though some drag racers use electronic speed controllers, the current record holders use simple on/off setups that consist of two 15 to 25A-rated microswitches glued to either side of an actuating servo.

ratio; then increase or decrease, one tooth at a time, for slippery or sticky track conditions.

TIRES

As for the front and rear tires, it's like blues and yellows taken one step beyond. The front tires are just common neoprene O-rings (minimal rolling resistance), and the rear tires are typically oversize (2.30 to 2.80 inches in diameter) super-soft foamies on $\frac{1}{12}$ -scale rims. All that foam has a tendency to "grow" at 40,000rpm, which gives a slight top-end final-drive ratio change.

ELECTRONICS

Some drag racers use electronic speed controllers, e.g., Novak's 828, which is rated for use with eight to 28 cells; Astro

Flight's Top Fuel speed controller; or Tekin's new 420. But the current record holders have a simple, ingenious little on/off setup that consists of two 15 to 25A microswitches that are glued on either side of a small servo. When the servo swings one way, it throws the "on" switch, and the car is "full on" instantly. When the servo centers, the car coasts, and when the servo swings the other way, the second switch shorts the motor and uses the back EMF of the motor to brake the car. The faster the car is going when the brakes are activated, the more braking power it has.

They may look too simple to be so fast, but they're the product of a lot of carefully thought-out design. And since they hit speeds near 80mph in less than 2 seconds, they're the ultimate R/C speed rush!



AUTOSCORE

The ultimate race scoring and race management program

- Menu driver - user friendly
- Quickly resolves frequency and number conflicts
- Sets up heats and mains in minutes
- Scores all qualifiers and mains by racer's name
- Will score up to 10 qualifiers and 1 main for each racer
- Can handle up to 1000 racers in 30 classes
- Prints complete standings by name or position
- Positions, lap times and speeds continuously displayed
- Runs on IBM pc or Compatible
- Only \$250, PRO version \$450
- Can be used with the AMB scoring system
- 1/4 scale version also available

AUTOSCORE IS THE VERY BEST

You can customize the program to your race format. It has been designed and modified over the years to handle all race conditions. You will not find a better program on the market. Call or write for a FREE demo disk and check it out for yourself.

B & B Software - 2146 Palomar Ave
Ventura, Ca 93001 (805) 643-2042

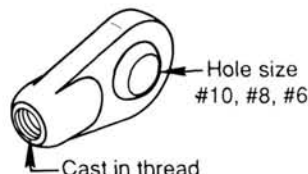
ROCKET CITY SPECIALTIES

NEW

11/32 BALL LINK

Fits many 1/4" scale cars

#17 Right \$2.50
#17L Left \$2.90



#17F 10-32 \$2.00
#17F1 8-32 \$2.00

Free Catalog

See your DEALER or order direct
ADD .60c for postage and handling.
Catalog sent postpaid.

103 Wholesale Avenue N.E.
Huntsville, Alabama 35811
Phone 205/539-8358



IEDA WORLDS DRAG RACES

sub-2 at 1.982 for the 2nd qualifying position, and California's Tim Smith was just over the 2-second mark at 2.015 for 3rd.

The 10-cell Alcohol Rail Class brought Terence Holt's Cordite-powered car another record in qualifying—a 1.956 at 71.02mph. Emanuel Soto's short-wheelbase Astro Flight-powered car was in 2nd position with 2.017. Santo Musco took 3rd with 2.06, and Gerardo Chang Diaz put down 2.080 for 4th, narrowly edging out Frank Martorelli at 2.084. Rich Lacharite (2.59) and Juan Rivera completed the seven-car field.

The Top Fuel Rails, the second-fastest class in R/C drag racing, run 14 cells and modified motors. In their qualifying sessions, Derrick Roth's Fine/Cordite dragster blasted the national record with his 1.803 ET run, and he was followed by Gerardo Chang Diaz at 1.844. Chris Fine clocked 1.89 for 3rd, and Eduardo Marquez went 1.94 for 4th.

The Top Fuel Unlimited Class brought out the heavy artillery—large cobalt motors and up to 20 cells—for the fastest runs of the day. Joe Miano, who had an accident with his experimental balsa-wood dragster, pieced together his spare chassis with the rest of his components and proceeded to rip out a pair of 1.70s—a 1.759 and a 1.780

at over 75mph—to top the field. Defending champion Chris Fine also got into the 1.70s with his 1.778 for the 2nd slot. Tim Smith ran a 1.808 to take 3rd, and my blue-and-white Astro Flight-powered dragster clocked in at 1.815 for 4th. Derrick Roth ran a 1.829 for 5th, and Mike Offie went 1.866 for 6th, followed by Chester P.'s 1.879 and J. Cordero Lugo's 1.883. With eight of the available 13 positions qualifying within .13 second of one another, it was still anybody's race.

CLIMBIN' THE LADDERS

After a short break, the elimination ladders (which are the ladders used by the NHRA) were posted, and the racing got under way. It became apparent that we'd run out of daylight before the finals, but light or no light, we were determined to race! No one would go home early!

The Bracket category saw Bob Smith meet Larry Hawkins in the final, with

Smith's 3.594 taking home the trophy. Smith ran identical 3.410s three times en route to the win. Now, that's consistency!

Super Stock boiled down to concours winner Bob Brossman and number-three qualifier Phil Salma, whose hot Firefox, stock-powered car took the win at 3.133. In the Consolation Round, where those eliminated in the first round were given a second chance to race against one another, Larry Laudenklos won over top qualifier Ricky Blanch.

Phil Salma also took the win in Econo Rail (over Ted Connolly), and he tied the national record at 2.746 in the semifinals. Salma is obviously very good at setting up stock motors for drag racing, and his ebullient personality kept our spirits up even



Parma's hemi engine makes this replica of the Castrol GTX top-fueler even more imposing.

in the rain. Congrats, Phil! Josh Neely took the consolation-round win over Jim Edwards.

Pro Stock competition was full of surprises, as number-one qualifier Terence Holt was edged out in the final by number-two qualifier Chester P., 2.034 to 2.036. It was a heavy-thrash weekend for Chester, as he literally put together his winning Fine/Cordite/ProtoForm car during the rained-out qualifying sessions. You had to be there to see Chester's new ProtoForm body being spray-painted under a tarp in the middle of a rainstorm! Ken Dailey Sr. showed no mercy for his son Ken Jr., in the Consolation eliminations.

In Super Comp, Tito Cordero came from the number-three qualifying spot to meet TQ Charlie Schaumburg in the final. Cordero broke Schaumburg's winning streak at K-N by beating Charlie's 2.06 with his 2.017. Chuck Pippin won over Ken Mason on the "concy" side.

(Continued on page 151)

PROJECT RC10L

(Continued from page 106)

others to test-drive the Project car. Other drivers remarked on its smooth handling out of corners and its very fast turning response. Some people just weren't used to a car that turned in quickly, and they were soon in trouble. But if you like to put a car *where* you want it and *when* you want it there, we've certainly found one.

The track is just too short and tight to run a car with a modified motor, so I used a stock one that put out plenty of ponies—enough to make me dial-in some torque control from the speed controller. After using the juice in a couple of battery packs to practice, I went for the real thing—racing!

On a normal club racing night, the car came second to the top qualifier. The pole-sitter and the Project car had a couple of laps on the field.

In the main event, the Project car again had to settle for second, but this was more the result of my lousy driving than the result of deficiencies in the car. It *does* show that the car has everything it needs to be a top dog on the track. Even the winner was impressed by it, and after the race, he took it for a tour of the circuit.

(Continued on page 138)

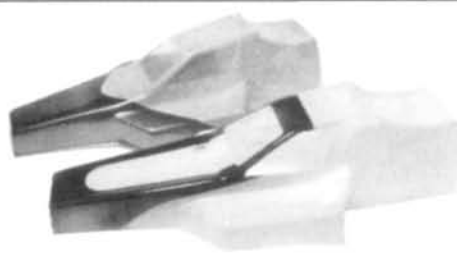
KILLER BODIES!

"High-Performance Parts for High-Performance Racers!"

RCPS Mirage SS and Turbo Mirage
Offroad bodies are used by the top racers in the world, and their sleek, aerodynamic design adds a touch of style to your buggy. Designed to fit RC-10 and many other popular cars. Get with the winners!



18312 Gifford St., Fountain Valley, CA 92708 • (714) 962-6928 FAX: (714) 962-4089



WHOLESALE

\$ \$ \$ \$ \$ \$ \$

START OWN HOBBY
SHOP, BUY FOR A
GROUP, OR JUST FOR
YOURSELF.

INFO. \$1.00 #10 S.A.S.E. TO:

R & L HOBBIES
10334 PORTAGE ROAD
PORTAGE, MI 49002

WANT TO INCREASE THE SPEED OF YOUR 10L, 10LSS, 12L OR 12LW? LIGHTEN UP!!!

SUPER HIGH STRENGTH DELRIN REAR HUBS



- Will not bend like Magnesium.
- 40% Lighter than original aluminum hubs (12L & 12LW 50% Lighter)
- Exclusive "Screw Lock" tapped holes. Screws holding wheels to hubs will not vibrate loose!

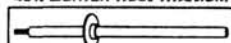
\$19.95 plus \$2.95 Shipping & Handling



12L & 12LW

PRICE
BREAK!

45% LIGHTER THAN TITANIUM



10L, 10LSS, 12L & 12LW

\$13.95 plus \$2.95 Shipping & Handling

Send Check or Money Order To:

Hubs Sold
in
Pairs only

Daranci Design, Inc.

P.O. Box 410 • Bohemia, NY 11716

All Orders Sent 1st Class ... Sorry, No C.O.D.'s

Please Specify
10L, 10LSS,
12L or 12LW

HOT PRODUCTS FROM HOLESHOT RACING PRODUCTS

▼ SUPERCOOLER 2000



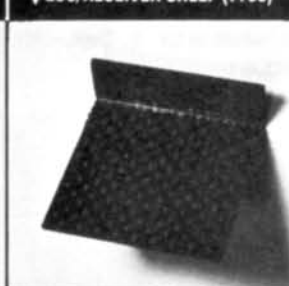
▼ SUPERCOOLER 2001



▼ ESC HEATSINK (2020)



▼ ESC/RECEIVER SHELF (7700)



▼ SHOO GOO (7025)



▼ BATTERY HEATSINK
(2200 & 2300)



▼ ESC SWITCH CLAMPS (4500,
4505-Novak Mini, 4510)



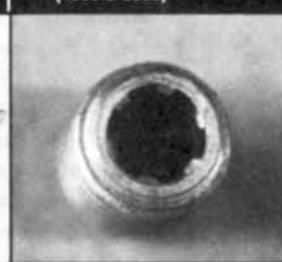
▼ HOLESHOT ALIGNMENT TOOL
(6000)



▼ LEFT & RIGHT TAP DRILL SET
(4040)



▼ SPLINED SET SCREW KITS
(4030 & 5030)



Holeshot Racing Products

P.O. BOX 630 • CANTON, MA 02021 • (508) 587-0663

RACER



NEWS

SPEED SHOP

PARAGON Equalizer Damping Post

Paragon's Equalizer Damping Post increases stability and improves handling on Associated's RC10L, 10LSS and 12LW cars. The Post allows both damping disks to maintain equal pressure on the pod plate, regardless of the car's attitude. Because the car isn't "loaded up" or "sprung," it's more stable and won't be affected by the bump-steer that track seams and dots can cause. The Post also makes adjusting the disk pressures on the pod plate much easier. Instead of adjusting each collar individually, you can simply loosen or tighten one nut to adjust all the tensions evenly.

Part no. EP855

Paragon Racing, 690 Industrial Cir. S, Dept. CA2, Shakopee, MN 55379; (612) 496-0091.



HAMMAD GHUMAN RACING Aluminum/Graphite Front Pro Axle

Hammad Ghuman's extremely light, aluminum-tipped, graphite, 1/10-scale on-road front axle replaces the standard, bulky, solid-aluminum or magnesium axles found on many cars. Its components are precision CNC-machined. Its unique split design allows you to make individual caster adjustments using only one cinch block; it also allows you to change the car's track—full width and superspeedway in one! It fits Lynx Series cars, Hyperdrive cars and other cars with straight front-axle designs.

Price: \$26.95

Hammad Ghuman Racing, 6 Tower Heights, Albany, NY 12211.

B&R MOTORWORKS Signature Series Modified Motors

B&R introduces its Signature Series of limited-production modified motors. Each is built by B&R's vice president of R&D,

Barry Hedrick, and has the new, powder-coated, hot-pink Epic can with 4.9 wet magnets. No compromises will be made on these motors; you have Barry's word on it. For a limited time, B&R will include its modified motor oil with every motor. These motors will be in high demand, so place your order today!

B&R Mfg. Corp., 28000 Tothill Dr., Saugus, CA 91350; (805) 296-0457.

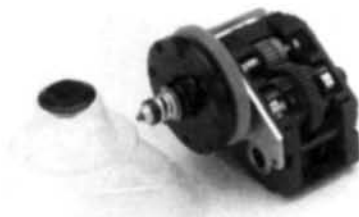


TEAM LOSI Hydra Drive

The long-awaited Hydra Drive hydraulic power transmission system is here. This easy-to-use, low-maintenance system (for all

Losi vehicles) may be the most important development in R/C car technology in a decade. It combines the qualities of two torque-control units (a friction slipper and a viscous coupling) to allow you to hook-up on virtually any track. It maintains maximum traction and provides more power than friction-type units. The TLA-3100 Traction Control System comes with the Hydra Drive and the basic friction-slipper components. The TLA-3101 comes with Hydra Drive and the components you need to upgrade the friction slipper on your Pro SE or LX-T. All parts are available separately.

Team Losi, 13848 Magnolia Ave., Chino, CA 91710; (714) 465-9728.



THORP MFG.
64-Pitch Hard-Anodized Aluminum
Top Gear and Shaft

This aluminum gear and shaft weigh two-thirds less than a steel gear and shaft. It allows you to run with or without the slipper, enabling you to remove even more weight from your Stealth transmission. (This assembly is for use with Thorp idle and diff gears only.)

Thorp Mfg. Inc., 4054 E. Mission Blvd., Pomona, CA 91766; (714) 622-6518.



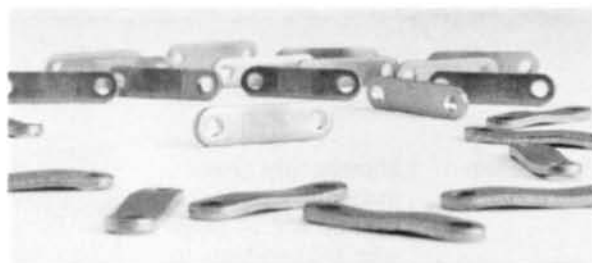
TRINITY
CU 64 Battery Bars

Trinity's new pure copper CU 64 battery bars have ultra-low resistance and are bent to fit the battery pack perfectly. Copper is the best conductor of electricity, and these bars are thick enough to carry the high-current demands of today's 9- and 10-turn modified motors. A package of eight bars is enough to build a 6- or 7-cell pack.

Part nos. RC5105 (8 bars); RC5106 (25 bars).

Prices: 4.99; \$11.50.

Trinity Products Inc., 1901 E. Linden Ave. #8, Linden, NJ 07036; (908) 862-1705.



TOP RACING PRODUCTS
Graphite Stock

Ultra-grade graphite stock is Top's most popular product. It's among the strongest graphite stock available. Standard-grade graphite stock is an economical alternative to Ultra, and it's equally suitable for car chassis and other large, flat structures.

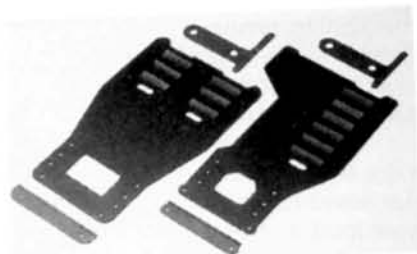
Standard-grade stock (8.75x11.75 inches) is available in 0.063-, 0.080-, 0.090- and 0.100-inch thicknesses.

Ultra-grade stock (9x12 inches) is available in 0.075-,

0.085- and 0.095-inch thicknesses.

Prices: \$44.95 to \$59.95 (Standard); \$70 to \$80 (Ultra).

Top Racing Products, P.O. Box 86424, Los Angeles, CA 90086; (213) 617-0791.



A&L
Blue Eagle
LS Lethal
Weapon 2

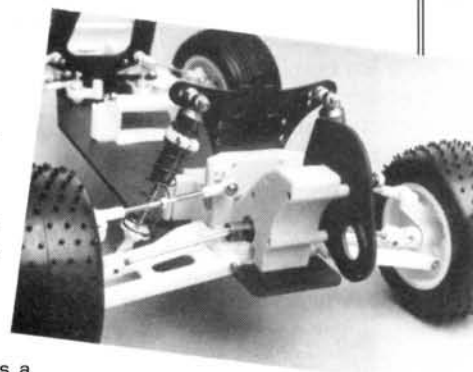
A&L's Lethal Weapon 2 for the Traxxas Blue Eagle LS truck includes

such upgrades as a lightened diff with precision ball bearings, a slipper power clutch and new dogbones. The dogbones eliminate the need for stock slider shafts, and this results in smoother rear-suspension movement with less maintenance. Also included are new, easy-to-follow, step-by-step instructions, and a supplement on track-maintenance tips and suggested gear ratios.

Part no. 194

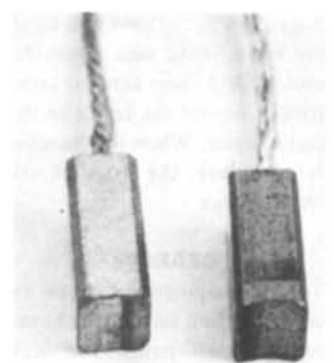
Price: \$137

A&L Mfg., P.O. Box 2115 Corona, CA 91718; (714) 735-5249.



Descriptions of the products shown on these pages were derived from press releases supplied by manufacturers and/or their advertising agencies. The information given is neither an endorsement of the product by Radio Control Car Action, nor a guarantee of performance or safety. If you write to the manufacturer about any product described here, be sure to say that you read about it in Radio Control Car Action.

WHETHER YOU like it or not, stock-class racing is very popular at many clubs and tracks across the U.S. Regardless of the race's size, it always seems as if the Stock Class has more entries than the Modified Class, even though most complaints at the track involve stock motors. Why do people like to race with stock motors? Let's take a close look at what it takes to go fast with stock motors.



The brush on the left hasn't been fully broken-in—note the small contact area. The brush on the right has a much larger contact patch—proof that it has been properly broken-in. The larger the patch, the more readily the brush will transfer power to the commutator.

BRUSHES

Selecting the right motor brush is crucial to stock-motor performance. All the stock motors supplied by U.S. importers, e.g., Trinity* and Reedy*, are manufactured in Japan. Since stock-motor prices are regulated, manufacturers install inexpensive (and, therefore, inadequate) brushes to help to control costs. If you want to improve your stock motor's performance, you'll have to replace the brushes.

Brushes made for R/C motors contain graphite, copper and, in some cases, silver. The graphite lubricates the contact point

between the brush and the spinning commutator. Since graphite resists electrical current, it also reduces the power that the brush delivers to the motor. Copper and silver, on the other hand, are highly conductive metals with very low resistance, but metal-to-metal contact will wear out the motor and result in poor performance as the commutator becomes out of round. Therefore, a high-performance motor with an acceptable life must have the right combination of conductive metals (copper and silver) and lubricant (graphite).

The words "soft," "hard" and "silver," which are often used to describe brushes, can be misleading. One company may offer a hard brush that's similar to another's soft brush. Ideally, brushes should be described by their compound, e.g., 60-percent copper, 40-percent graphite and 0-percent silver, but manufacturers are reluctant to reveal

their "secret compound."

Don't be misled by the term "silver brushes." Many brushes are advertised as "silver shunted," and many racers believe that these brushes contain silver when, in fact, only the lead wire

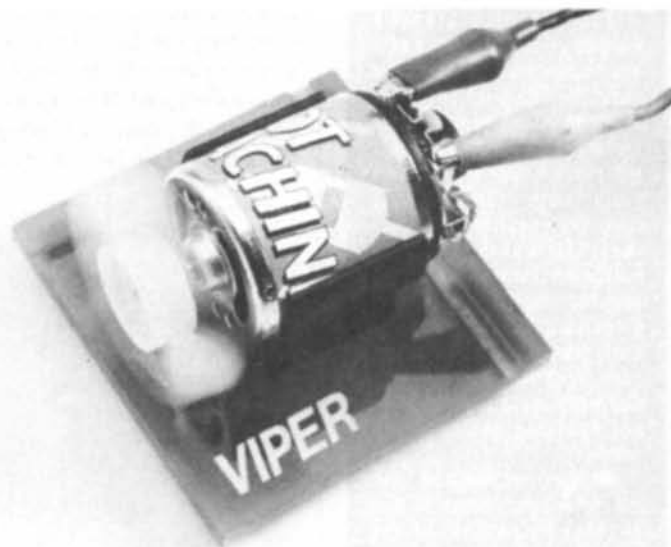
(shunt) is silver-plated. Because silver is expensive, some racers think that silver equals speed, but this isn't usually the case, especially with stock motors.

There are several good brushes available, e.g., Trinity's

Stock Motor Mysteries

by FRANK CALANDRA

How to solve them!



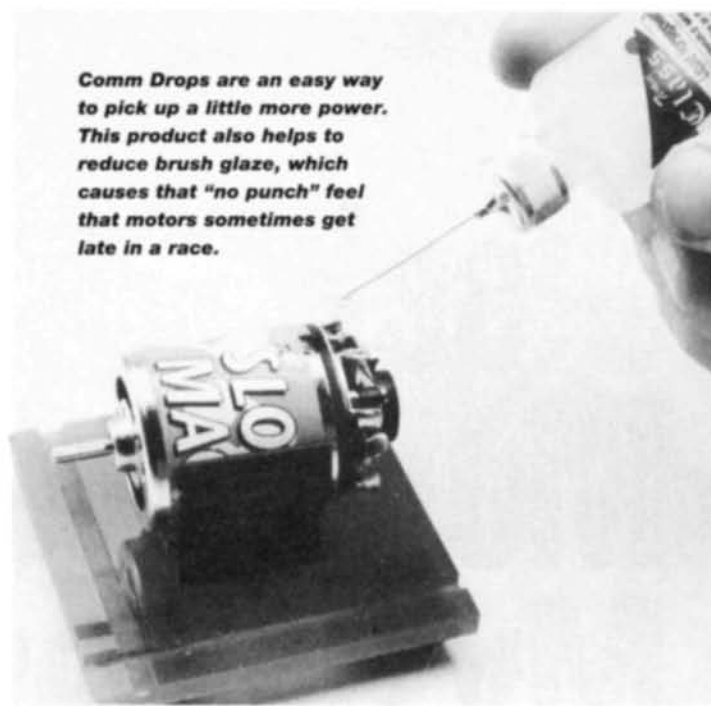
Use from four to six volts until the brushes are fully broken-in. Class makes a small fan that can be connected to the motor's shaft to keep the motor cool during the process.

4038, Reedy's Ultra, Bud's* HPS and Class's* Soft. These manufacturers attend races all over the country so they can keep an eye on the competition and answer questions about their products.

BRUSH BREAK-IN

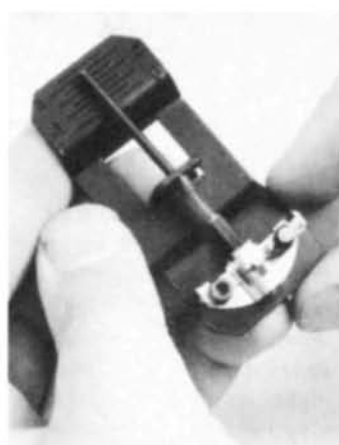
To ensure good performance, new brushes must be broken-in. The contact patch between the commutator and the brush is very small when the brushes are new, and when this area touches the commutator, it chokes the motor. Think of an over-inflated tire touching the road at only one point. All the power of the spinning tire must be transmitted to the road through this small area. The same is true for brushes. All the battery's energy must be transmitted through this

Comm Drops are an easy way to pick up a little more power. This product also helps to reduce brush glaze, which causes that "no punch" feel that motors sometimes get late in a race.

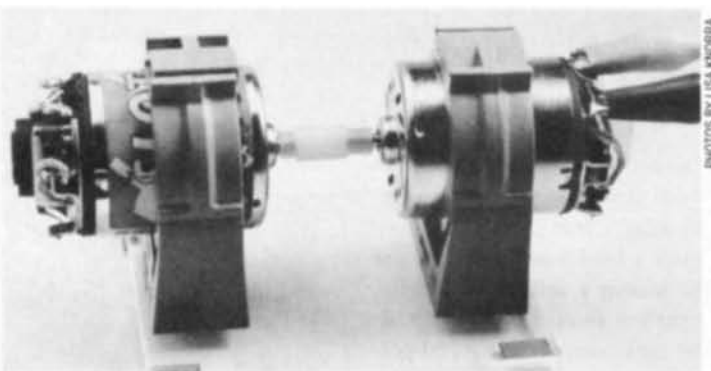


brush/motor contact point. The larger the patch, the more current can flow to the motor. If you don't break-in the motor properly, there will be a reduction in the amperage, the magnetic flux, the acceleration and in the number of trophies that you take home.

Breaking-in brushes is pretty simple. In the pits, you might hear "only break-in with 4 volts" or "6.21 volts for killer speed" or "only break-in under a full moon." Don't believe everything you hear. To break-in the brushes, run the motor at a moderate speed. If the speed is too slow, the motor can become too hot; if it's too fast, the motor



A spring tester tells you which springs are heavier. It will also help you to determine which springs have become overheated and are no longer tempered.



You can also break-in a motor using a second motor, or slave motor (right). By running the slave motor backwards, the other motor can be broken-in without applying voltage, which also helps to extend its life.

will arc and wear out the commutator prematurely. Proper motor speed usually requires anywhere from 4 to 6 volts but, again, this isn't crucial. Run the motor for 15 minutes; then remove one brush to see how much of the brush's surface has contacted the commutator. The procedure can take as long as an hour and is complete when at least 80 percent of the brush comes in contact with the commutator. Make sure that your motor is in a cool, well-ventilated area.

After the brush has been broken-in, re-install it, and run the motor for an additional 2 to 5 minutes. Every time you move the brush, make sure to run the motor for a short time to completely re-seat the brush to the commutator. When this process is complete, the brushes are ready to race.

GEARING

To find the proper gear ratio for the track, first undergear the car (using a small pinion) and work up, rather than overgearing (and overheating) and working down. Try to gear the car so that the motor "tops out" or stops accelerating about two-thirds of the way down the longest straight-away. Whether you're on an oval or on a roadcourse, don't gear too high so that you develop too much top speed entering the turn. The added gearing will lower your acceleration off the turns and increase your lap times overall.

Be sure to factor in tire size when you determine gear ratio. The distance that the car moves during one revolution of the motor is called "rollout." To determine rollout, use the following equation:

$$\text{Rollout} = (\text{tire diameter} \times 3.14 \times \text{pinion/spur})$$

As you can see, when tire diameter increases, rollout increases. This has the same effect as

(Continued on page 155)

BREAK-IN POINTS

I like to run my stock motors mounted in the Team Class Motor Maintenance Center. This motor stand comes with a handy fan that attaches to the motor shaft and provides a small load to speed up the break-in procedure. More important, it cools the motor. If a motor stand isn't available, you can cool the motor with a small box fan.

You can also break-in brushes effectively with a second motor. Use a dual motor stand, and connect your race motor to an old motor (slave motor). In this case, power the slave motor with 4 to 6 volts with the polarity reversed (positive to negative). This will run the slave motor backwards and spin your race motor in the proper direction. Be sure to keep both motors lubricated and cool. With this method, you can break-in the brushes without applying power to the motor.

With either method, run the motor long enough so that at least 80 percent of the brush is touching the commutator. This may take from 15 minutes to an hour and a half.

RACER NEWS

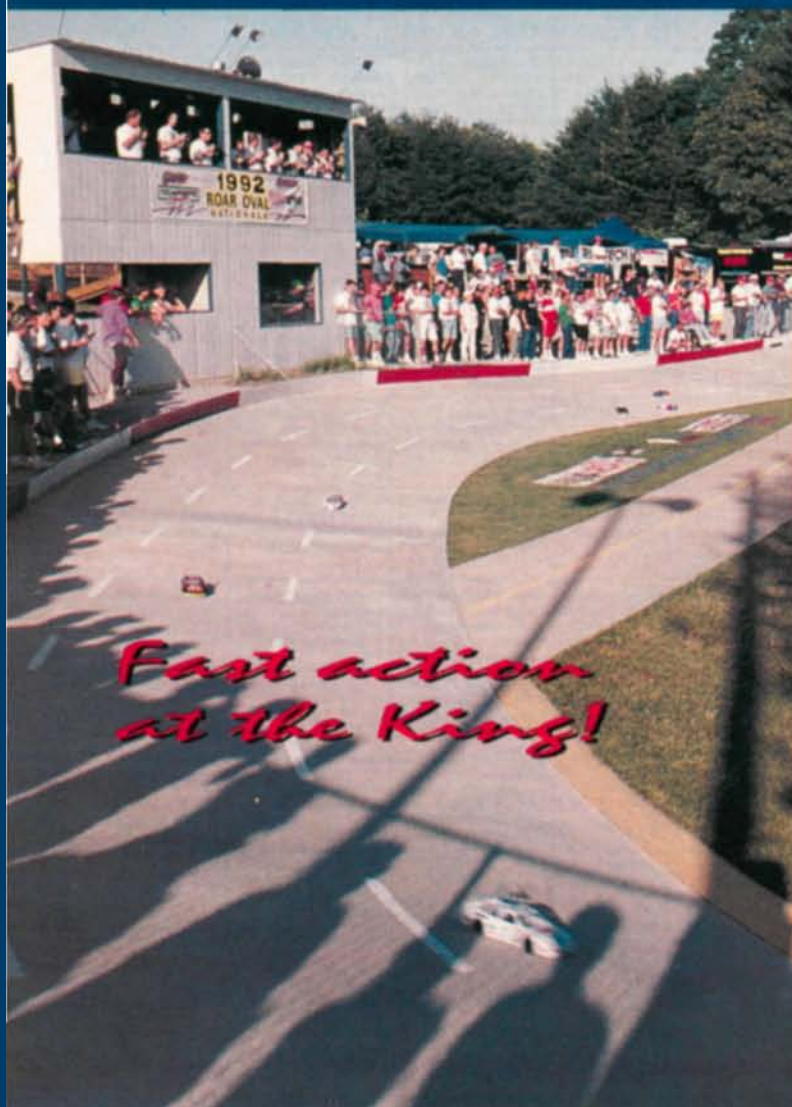
1 9 9 2

ROAR

OVAL NATS

by JIM SHEPKA

sponsored by
Composite Craft & Hyperdrive/PTI



*Fast action
at the King!*



I CAN THINK of no better way to spend a May weekend than in North Carolina. Memorial Day weekend marks the unofficial beginning of summer, and it's a time when those who have served and fallen in defense of their country are remembered and honored.

It's also synonymous with one of the greatest motor-sports spectacles—the Indy 500. This event has more mass appeal than Madonna, and it has spectators and press coverage that no other single-day sports event can rival. But...

...it's North Carolina we're talking about—the home of Wilbur and Orville



and the "good ol' boys" of stock-car racing. With the the Coca-Cola 600 being run at the nearby Charlotte Motor Speedway ("If ya ain't got fenders, you ain't racin'!"), this great state was the place to be that weekend.

And that wasn't all! The King R/C Speedway in King, NC, was the site of the 1992 ROAR Oval Nats, which were sponsored by Composite Craft and Hyperdrive/PTI.

If you're a race fan, whether of full-scale or of R/C, attending a national event is a must. The Nats is the year's first big oval event, and the greatest tal-



ROAR OVAL NATS

ents in the industry—all the major teams—were there to shoot it out for bragging rights and a national championship. There was also plenty of high-quality local talent looking to mix it up at one of the country's top racing facilities.

It never ceases to amaze me how far this sport has come, especially when I consider the racing facilities that have been built to support these events. Owned and operated by Paul Covington, the King R/C Speedway is truly first-class. It caters to all racers' needs, and this helps to promote our sport.

With more than 440 racers, there was plenty of action to keep the huge crowd of spectators and racers entertained. Four rounds of qualifying were scheduled—two on Friday and two on Saturday—and the Mains were scheduled for Sunday.

The Speedway has been used for a number of large events over the past couple of years, so the course was no surprise to the team drivers. Horsepower is always crucial, and Kent Clausen, Terry Rott, Bud Bartos, Chris Doseck and Ralph Burch Jr. were ballistic right out of the box. Joel Johnson and Ricky Jordan were slightly off the early pace, but everyone expected they'd be up to speed in the later rounds.

After Friday's qualifying, a lot of drivers strutted their stuff in the Concours and Best Paint competitions. The judges—Jordan, Gary McAllister and Bob Novak—labored for quite a while before announcing the winners. In Best Paint, Jeff Yost took top honors with his beautifully detailed "Zagnut" clone; Keith Rockett (great race name!) was runner-up with his "Maxx Card" special; and Chris Bertotti, with his wild "Grand Oval" paint scheme, was right behind.

In the highly contested Concours class, top honors went to Doug Voss and his incredibly detailed "Swervin' Irvan" Kodak

Chassis. The driver even had a moustache! No less impressive was Earl Toltziz's "Western Auto" entry, which edged out Bob Claussen and his "Citgo" ride. If you ran

"Saturday's weather was beautiful, and hopes ran high for qualifying. A number of drivers were still searching for the right combination of speed and handling—and a clean qualifier!"

these three entries together, you'd swear that you were around the corner at Charlotte Motor Speedway watching the "Winston"—a very impressive group of cars.

Saturday's weather was beautiful, and

hopes ran high for qualifying. A number of drivers were still searching for the right combination of speed and handling—and a clean qualifier! Spectators started to arrive at the grassy area around the track, and that added to the drama of the show.

The third and fourth qualifying rounds went off without a hitch, and I was impressed by the efforts ROAR officials made to keep everything running smoothly and on time. With 44 qualifiers to be run, their efforts were greatly appreciated by racers and fans.

THE BIG SHOW

With rain forecast for later, the lower Mains were sent off on schedule, and trophies were presented in the pit area after each one. This

1/12 STOCK

Fin	Qual	Name	Chassis	Motor	Radio	ESC	Batteries
1	4	Brian Burkhardt	CompCraft 12LW		Futaba PCM	Tekin 411G	Ballistic
2	6	Larry Flowe	Hyperdrive 12	h	Futaba PCM	Tekin 411P	PTI
3	10	Josh Larrick	Associated 12L	a	Futaba PCM	Novak T-1	Sanyo
4	7	Douglas Butz	Associated 12LW	n	Futaba PCM	Tekin 411G	1700 SCRs
5	8	David Gusler	Associated 12L	d	Futaba Magnum	Tekin 411P	Hurricane/PTI
6	5	Matthew Rogers	CompCraft 12LW	o	JR 756	Novak M1c	PTI
7	9	Chad Mears	Associated 12L	u	Futaba PCM	Tekin 600	Team Smooth
8	2	Warren Strong Jr.	n/a	t	n/a	n/a	n/a
9	1	Eric Desrosiers	CompCraft 12L		Futaba PCM	Novak M1c	Trinity Pushed
10	3	Frank Polimeda	Prozone DX-12		Airtronics Caliber	Tekin 411G	Trinity

1/12 MODIFIED

Fin	Qual	Name	Chassis	Motor	Radio	ESC	Batteries
1	1	Chris Doseck	Hyperdrive RS	CAM	Airtronics Caliber	Tekin 410K	Team Arlington
2	4	Joel Johnson	CompCraft 12L	Trinity	n/a	n/a	Trinity
3	7	Shane Kocher	CompCraft 12L	Trinity	Futaba PCM	Novak MXc	Trinity
4	3	Terry Rott	Bolink LTO 12	East Coast	Airtronics Caliber	Novak	East Coast
5	6	Dave Raber	Bolink LTO 12	CAM	Futaba PCM	Tekin 411G	PTI
6	2	Kent Clausen	Associated 12LW	Reedy	Futaba	Novak	Reedy
7	5	David Timmerman	CompCraft 12L	East Coast	KO Propo	Novak	East Coast
8	8	Chris Smith	CompCraft 12L	East Coast	KO Propo	Novak M1	Mustang
9	9	Bob Hall	CompCraft 12L	Magnum	Futaba PCM	Novak M1	Team Smooth
10	10	John Themelis	Associated 12L	Mighty	Airtronics Caliber	Tekin	PT Cells

1/10 STOCK

Fin	Qual	Name	Chassis	Motor	Radio	ESC	Batteries
1	1	Frank Polimeda	Prozone DX-10		Airtronics Caliber	Tekin 410K	Trinity
2	5	Richie King	TRC Lynx II	h	Futaba PCM	Tekin 410	Super Cell
3	2	Tim Holland	TRC Lynx II	a	Futaba PCM	Tekin 411G	PTI
4	9	Mike Kohler	Hyperdrive	n	Futaba	PDI Zeta	Super Cell
5	3	Larry Flowe	Hyperdrive	d	Futaba PCM	Tekin 411P	PTI
6	4	Douglas Butz	Associated 10L SS	o	Futaba PCM	Tekin 411G	1400 SCRs
7	7	Brian Booze	TRC Lynx II SS	u	Futaba PCM	Novak MXc	CEB
8	8	Mark Decker	TRC Lynx II SS	t	Futaba PCM	Novak MXc	CEB
9	6	Michael Herald	TRC Lynx II SS		Futaba PCM	Novak MXc	Hagerstown
10	10	Frank Paulin	Associated 10L SS		Futaba PCM	Tekin 411P	PTI

1/10 MODIFIED

Fin	Qual	Name	Chassis	Motor	Radio	ESC	Batteries
1	3	Ernie Bucci	TRC Lynx II SS	Trinity	n/a	Novak	Trinity
2	2	Ralph Burch	Hyperdrive H10RS	CAM	Futaba	Tekin	PTI
3	3	Chris Smith	TRC Lynx II SS	East Coast	KO Propo	Novak M1	East Coast
4	9	Tony LaVoie	Bolink LTO SS	CAM	Futaba PCM	Tekin 411G	Smooth/Arling
5	8	Gary Warren	Hyperdrive	CAM	Futaba PCM	Tekin 410K	PTI/Smooth
6	10	Terry Rott	Bolink LTO SS	East Coast	Airtronics	Novak	East Coast
7	5	Tim Lanier	Bolink LTO	CAM	KO Propo	Tekin 410K	Team Smooth
8	7	Mike Boylan	Associated	Twister	Futaba PCM	Novak M1	Team Smooth
9	6	Kent Clausen	Associated 10L SS	n/a	Futaba	Novak M1	n/a
10	4	Chris Doseck	Hyperdrive RS	CAM	Airtronics Caliber	Tekin 410K	Team Arlington

Body	Tires	Sponsors
Bolink Pontiac	TRC radials	Bud's, Holeshoot, Tekin, Jaco, Du-Mor
Bolink Pontiac	TRC radials	Hyperdrive, PTI, TRC, Tekin, Bolink
Bolink Pontiac	TRC radials	Super Cell, Bad Boy Motors
Bolink Lumina	TRC radials	Edith's Pizza, Hagerstown Moped, J&J Racing, B&D Hobbies, CEB Motors, ERP
Bolink T-bird	TRC radials	CAM, Hurricane
Bolink T-bird	TRC caps	Hyperdrive, PTI, CAM, Protoform
Bolink Pontiac	TRC radials	Cannon, CAM, Smooth, Bad Dog, Associated
n/a	n/a	n/a
Bolink Pontiac	TRC	Trinity, TRC, Composite Craft, C&C Country Hobby
Bolink T-bird	TRC caps	Trinity, Tekin, Protoform, Jaco, Radical Racing, Sonzogni

Body	Tires	Sponsors
Bolink Pontiac	TRC	CAM, Hyperdrive, Tekin, TRC, Competition Electronics, Tecnacraft, Lavco, Du-Mor
Bolink Pontiac	TRC	Trinity, Tecnacraft, TRC
Bolink T-bird	TRC gold	Trinity, Composite Craft, Novak, TRC
Bolink Pontiac	TRC	Bolink, Novak, East Coast, Airtronics, TRC
Bolink T-bird	TRC gold	CAM, Bolink, PTI/Hyperdrive, Tekin
Bolink Pontiac	TRC	Associated, Novak, TRC, Futaba, Lavco
Bolink T-bird	TRC	East Coast
Bolink Pontiac	TRC	TRC, Composite Craft, East Coast, Tecnacraft, King R/C Mustang, Novak, Bad Dog Racing, Bolink
Bolink Pontiac	TRC	Associated, PSE/Parma, Magnum Motors, Composite Craft, Bolink, Novak, Rainbow Riders, MTS
Bolink T-bird	TRC radials	PT Cells, Mighty Motors

Body	Tires	Sponsors
Protoform T-bird	TRC radials	Trinity, Tekin, Protoform, Jaco, Radical Raceway, Sonzogni
Bolink Pontiac	TRC radials	n/a
Bolink Pontiac	TRC radials	PTI
Bolink	TRC	Super Cell, Bad Boy Motors
Bolink T-bird	TRC	Hyperdrive, PTI, TRC, Tekin, Bolink
Protoform T-bird	TRC radials	Edith's Pizza, Hagerstown Moped, J&J Racing, B&D Hobbies, CEB Motors, ERP
Bolink T-bird	TRC radials	CEB Motors, Hagerstown Moped, J&J Racing
Bolink T-bird	TRC radials	CEB Motors, Hardee's, Hagerstown Moped, Brian Booze
Bolink Pontiac	TRC	Hagerstown Moped, Inside Line, J&J Racing
Bolink Pontiac	TRC	n/a

Body	Tires	Sponsors
Bolink	TRC	Trinity
Protoform	TRC	PTI, Hyperdrive, Fut, CAM, Tekin, Protoform, Bud's, TRC
Bolink Pontiac	TRC	TRC, Composite Craft, East Coast, Tecnacraft, King R/C, Mustang, Novak, Bad Dog Racing, Bolink
Bolink Pontiac	TRC	Bolink, CAM, Team Smooth, Team Arlington, Kaco, McLin
Bolink T-bird	TRC	CAM, Hyperdrive, Team Smooth, Tekin, Bolink, Jaco, Bud's Bad Dog Racing
Bolink Pontiac	TRC	Bolink, Novak, East Coast, Airtronics, TRC
Bolink T-bird	TRC radials	Bolink, CAM, Team Smooth, Tekin
Protoform Pontiac	TRC wraps	Twister, Team Smooth, Novak, TRC, Protoform, Compotie Craft, Bad Dog, Braun, MTS
Bolink	TRC	Associated, Novak, Lavco, TRC, HPI
Bolink Pontiac	TRC	CAM, Hyperdrive, Tekin, TRC, Team Arlington, Airtronics, HPI, Bud's, Bolink

kept the program moving and allowed many drivers the chance to hit the road a little earlier for the long drive home. With clouds moving in, the A-Mains were called to the line. The track was surrounded by spectators and racers and, overhead, a lunatic in a biplane did aerial maneuvers, all of which added to the excitement (or terror, depending on your level of sanity!).

1/12-SCALE MODIFIED

In the best race of the day, Clausen took a holeshoot on the start and jumped out to an early advantage. Everyone got away cleanly and took up the chase. With Clausen out front, a great battle for 2nd developed between Doseck, Johnson and newcomer John Themelis. While these three battled it

out, "Mombo" Clausen stretched his lead. Around halfway, he started to fall back to the pack as Johnson passed Doseck for 2nd. Themelis stayed right on Doseck's bumper as the three put on a great display.

At the 3-minute mark, Johnson, Doseck and Themelis all passed Clausen in a big way as "Mombo" started to go soft. With the track clear, Magic Johnson and Doseck lived up to their reputations and ran nose-to-tail or door-to-door in an unbelievable show of R/C expertise. To his credit, Themelis hung a few lengths back in 3rd, waiting for something to happen.

At the 4:30 mark, Themelis's bid for the top spot went south, as did his batteries, and he wisely parked it on pit lane. A great run for the rookie! Back out in front, Doseck was

all over Johnson and took back the top spot with a great inside move. Doseck stretched it out and added another national title to his impressive résumé. Congratulations to Chris and Tate McDaniels of CAM Motors for another exciting 1/12-Scale Championship!

Doseck was followed by Johnson, who just edged out rookie teammate, Shane Kocher by 0.13 second. Rott and Dave Raber rounded out the top five.

1/12-SCALE STOCK

It wasn't as bad as Roberto Guerrero's parade-lap crash at Indy, but it was a close second. Nerves obviously got the best of the field, because there was a huge shunt at the start. Needless to say, it was pretty ugly. It took a few laps to get it all sorted out, but

ROAR OVAL NATS

when the cars at last got up to speed, it was Brian Burkhart at the point followed by Larry Flowe and Josh Larrick.

The top three qualifiers, Eric Desrosiers, Warren Strong Jr. and Frank Polimeda never recovered from the first-turn wreck and were never really in the race. That was too bad, because less than a car length separated their qualifying efforts.

The race settled into a great battle for the top spot with Burkhart driving a clean line and holding off Flowe. With time running out, Larrick fell off the pace as Flowe tried to pass Burkhart. And then it happened! (If I have a pet peeve about this sport, this is it.) A corner marshal, who shall remain nameless (you know who you are!), was watching



Kevin Maurer diligently inspects motors for Trinity team members.

the race rather than watching his assigned spot! A car slid off the track and sat there for more than a lap while the marshal enjoyed the action. When the spectators and announc-

er eventually got his attention, he picked up the car and put it down directly *in front of the lead pack!* (Didn't your parents ever teach you to look both ways?!) Again, not a pretty sight!

I compare the duties of corner marshals to those of major-league referees who make calls that affect the outcome of the game. Wake up, marshals! It only lasts 4 minutes!

Burkhart survived for the win and was followed by a quick-thinking Flowe, and Larrick rounded out the medal winners.

1/10-SCALE STOCK

This was by far the cleanest race, as everyone left the starting grid in order. Polimeda avenged his last-place finish in the 1/12-Scale Stock A-Main by taking an early lead and holding it to the finish. Five drivers stayed on the lead lap as they neatly worked their way through the field. This Main was free of incidents because the drivers paced themselves and showed real talent. At the buzzer, it was Polimeda, followed by late-charging Richie King (just 0.95 second behind) and Tim Holland. Mike Kohler and Flowe came in 4th and 5th, respectively.

1/10-SCALE MODIFIED

Race officials were really pressed to start this race before the rain came. The sky had turned quite dark, the wind had picked up, and the temperature must have dropped by at least 15 degrees. I thought that these conditions might affect the handling of these finely tuned race cars, and I was right. Off the start, pole-sitter Chris Smith lost it going into turn one; the field passed him in a beat.

Mike Boylan had a great start and quickly moved up to 2nd from his 7th starting spot to put the pressure on front-runner Ernie Bucci. Clausen showed some early muscle and took over 3rd, followed by Doseck and Rott.

For the first minute, Boylan headed a strong field, and then Doseck tagged the back wall and came across the track. Boylan, Bucci and Burch got through, but Clausen failed to find an opening and "T-boned" Doseck in a big way. Doseck's day was over, and the corner marshals had to pick their way through the wreckage (broken axle). Clausen never recovered and was relegated to a back marker.

At the halfway mark, five cars were still on the same lap—Boylan, Bucci and Burch led the field. Rott never got up to speed and showed great sportsmanship as he pulled out of the racing line to let the leaders through.

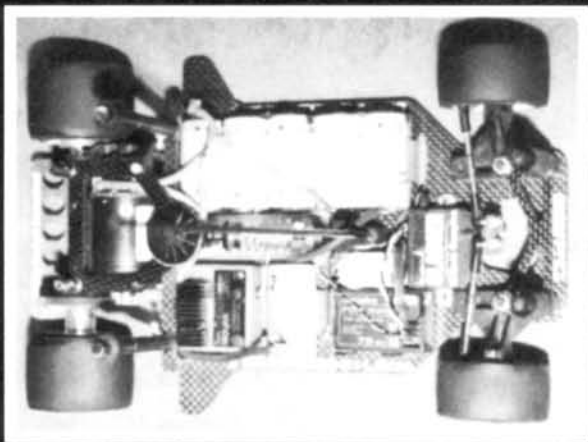
Gary Warren made his presence known as he moved up to 3rd, but he tangled with slower traffic and was launched into the infield.

NEW... FOR YOU!

things from this company.

HPI and CKW showed off their new chassis plates. Kent Clausen made the A-Mains with his 12LW, which sports HPI's new five-slot-a-side plate. Racers obviously want to concentrate weight on the left, and companies are responding to their wishes. CKW showed us an interesting molded-composite chassis. Around the outside edge of the chassis plate, there's a molded, 1/4-inch lip that increases the plate's strength. To reduce chassis flexing, ribs have been added, and the affordable kit includes everything you need to modify your stock 10L SS.

Hyperdrive's latest super-speedway car was in the very capable hands of Ralph Burch Jr. (He put his on the outside pole for the A-Main!) This car has a left-turn-only chassis plate, too, but it also has a unique two-piece rear suspension. Hyperdrive and Bolink both successfully took the two-piece approach, although their products differ in design. Watch for my review of the new Hyperdrive car in an upcoming issue of *Car Action*.



Kent Clausen's RC12LW

At events like the ROAR Nats, we typically see the latest products, and this year was no exception. In the never-ending search for speed, many industry leaders are turning their attention to enhancing the aerodynamics and handling of their cars. Body design has always been at the top of the list as far as drag reduction is concerned, but chassis design and the channeling of air under and around it have really come to the fore. Ground-effects chassis have been around for a while and are increasingly seen at the superspeedways. To route the airflow from under the chassis and increase downforce, Lexan belly plates have also been fitted to the chassis.

Composite Craft's latest 1/12-scale chassis has already hit the track. Dubbed "the limo" by the company's

team drivers, the chassis has room for all the battery cells along its left side. This means that it's longer and more stable. More than one driver said that it handled like a 1/10-scale car.

After testing cars in a wind tunnel, Bolink's Rick Jordan thinks there's still a lot to be gained by making subtle changes to the popular T-Bird and Pontiac bodies. Bolink's latest 1/12-scale release—a Pontiac Grand Prix—was a huge success at the Nats (PC Hobbies sold out of them early in the week).

A relative newcomer to the body wars is Protoform, whose owner/designer Dale Epp was very pleased with the reception of his beautifully detailed T-Bird, Lumina and Pontiac bodies. These true-to-scale bodies are fast and stable when run at speed. Expect big

BIG R/C FANS



Who, together, weigh more than 600 pounds and consume enough food at one sitting to feed the Space Shuttle crew for a week!

Not a clue? Well, it's Mrs. Davis's boys, Reubin and Donnie.

Reubin is a defensive tackle for the Tampa Bay Buccaneers and his little brother Donnie (defensive end, looking for work!) are really serious about R/C racing. They were introduced to the sport by Frank Pupello—equipment manager for the Bucs and designer of those neat Bolink, Hooters Restaurants and ROAR T-shirts.

This was Reubin and Donnie's second big event, and they both enjoyed the speed, realism and good-natured fun that's associated with this sport. They say it's also a nice departure from the everyday training and brutality of the NFL. Speaking of brutality; have you seen these guys race? Just kidding, really...

A number of other Bucs players have more than a passing interest in R/C cars. They asked me to mention teammates Keith McCants, Broderick "Sandman" Thomas and Joe King.

Hey guys, if things don't work out for you in the NFL, I hear Joe Gibbs is looking for a couple of hardbodies to help out around the Interstate Batteries shop...

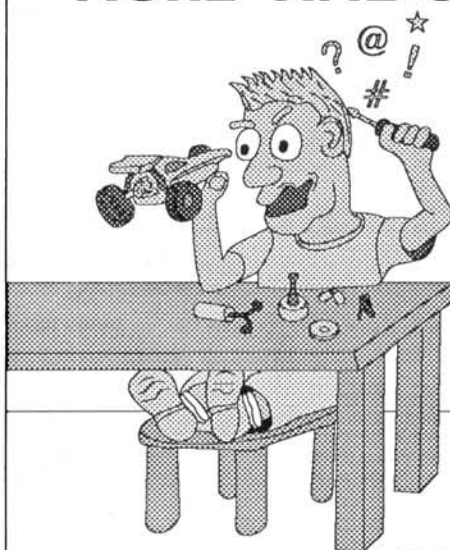
• • • • •

With time running out, Boylan went soft and left the fight to Bucci and Burch (who seemed to have the faster car). Bucci drove a perfect line, and that forced Burch to try to drive around him. Keeping his cool, Bucci held his line and took an impressive win. The margin of victory was less than a length.

Smith came back after his horrible start to finish a well-earned 3rd. Tony LaVoie and Gary Warren also finished on the lead lap.

A special thanks to this year's sponsors, Composite Craft and Hyperdrive/PTI and to the host track, PC Hobbies, for a very exciting, well-organized event. See ya back at the "King" for the *Car Action* Shootout in October.

LESS TIME IN THE PITS MEANS MORE TIME ON THE TRACK!



STEADY LIFT JR.



P.O. Box 1607
Tomball, TX 77377
1-800-527-1079
Fax: (713) 259-7801



Hey R/C Retailers —

Drive up your store's business!

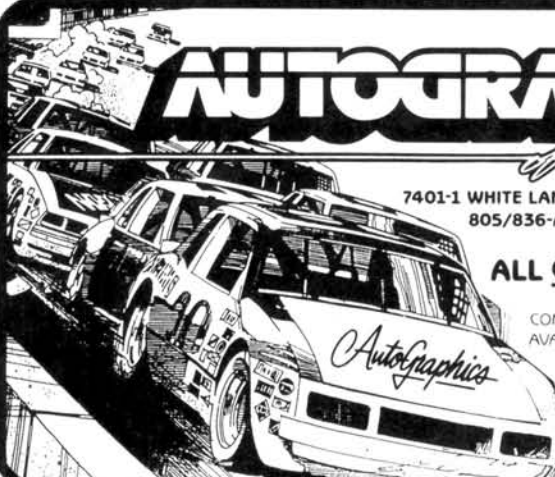


Drive customers into your store by stocking the fastest moving R/C car magazine — *R/C Car Action*! Customers race in for each and every issue AND to check out what's hot on your shelves. More traffic in your store means turbocharged sales.

Put your store in the fast lane. Stock *R/C Car Action*. To order, call Kalmbach Publishing Co., the exclusive hobby shop distributor in the U.S. and Canada, at (800) 558-1544, ext. 579.

Dealer inquiries only.

Radio Control
CAR ACTION



AUTOGRAPHICS

California

7401-1 WHITE LANE • BAKERSFIELD, CA 93309 USA
805/836-AUTO (2886) • FAX: 805/836-0938

ALL GO AND NO SHOW ?

COMPLETE LINE OF QUALITY PRODUCTS
AVAILABLE AT YOUR LOCAL HOBBY SHOP



PROJECT RC10L

(Continued from page 121)

Overall, my Project 10L is quite a success. I admit to having had some doubts about the how the rear end would work with all this after-market equipment on it. But, now that it's on there, it's *not* coming off! Was I trying to teach an old dog a new trick? You bet—and it worked!

**Here are the addresses of the companies mentioned in this article:*

Associated Electrics Inc., 3585 Cadillac Ave., Costa Mesa, CA 92626.

DA Graphite, 1235 Portola Ave., Spring Valley, CA 91977.

Cheetah Racing, 10823 Amestoy Ave., Granada Hills, CA 91344.

R/C Performance Specialties, 18312 Gifford St., Fountain Valley, CA 92708.

Bud's Racing Products, 1575 Lowell St., Elyria, OH 44035.

Du-Mor R/C Inc., 1002 Union Landing Rd., Cinnaminson, NJ 08077.

Airtronics Inc., 11 Autry, Irvine, CA 92718.

Tekin Electronics, 970 Calle Negocio, San Clemente, CA 92672.

Protoform, 1733 Maryland Ave., Unit 3, Niagara Falls, NY 14305.

Pactra Inc., 620 Buckbee St., Rockford, IL 61104.

HPI, 22600-C Lambert St., Suite 904, El Toro, CA 92630.

Bolink R/C Cars Inc., 420 Hosea Rd., Lawrenceville, GA 30245. ■

SCOPING OUT

(Continued from page 78)

trigger reaches maximum. In this case, change the maximum current level to 60 amps.

CONCLUSION

The 410K is a true high-frequency motor-drive controller with extremely low "on" resistance. You don't need a degree in computer science to program it; its keypad is labeled in plain English and the programming sequences are logical. (I was especially impressed by how easy it was to match the 410K to my transmitter.)

The 410K is loaded with features, but its most outstanding characteristic is its performance. At the ROAR Dirt Oval Nats, Chris Doseck drove his 410K-equipped Dominator to the TQ position in the 4WD Modified Class. To prove that it wasn't an accident, he then piloted his rig to a first-place A-Main finish. Fellow race fans, this is true world-class performance!

**Here's the address of the company featured in this article:*

Tekin Electronics Inc., 970 Calle Negocio, San Clemente, CA 92672. ■

FUTABA FXT

(Continued from page 94)

RUBBER MEETS THE ROAD

The FXT's good-looking body (white with hot fluorescent decals) and trick wheels turned heads everywhere it went. I hesitated to drive it because I hated to scratch it. I didn't need to worry, though; the FXT handled beautifully, and I couldn't seem to wreck it!

The unusual tires worked well on asphalt, gravel and packed dirt—even on grass. The only surface they didn't handle well was loose sand.

WHERE TO NEXT?

The stock 540 motor that comes with the kit is perfect for backyard bumping around, but you'll soon crave more speed. I added a Twister* Pocket Rocket stock motor. Because the plastic transmission is a poor heat sink, I also added a Holeshoot* Super Cooler to cool the faster motor, and with the extra torque, I had to glue the tires to the rims.

The nylon bushings that came with the kit performed quite well, but if you don't keep them clean, they won't last long—especially on a dirt track. After a half-dozen battery packs, shiny rings had been worn into the rear

(Continued on page 146)

STOP PAYING TOO MUCH FOR BATTERIES

B & T R/C PRODUCTS

508 Lakewinds Trail • Rougemont, N.C. 27572
919-471-2060 • 12:00 PM-8:00 PM E.S.T.

JACO TIRES & WHEELS WET RUBBER & FOAMS A MUST TO WIN!

SANYO 1400 SCR CELLS

Pre Cycled	\$ 2.25 Ea.
Virgin Cells	\$ 2.75 Ea.
275 + 6 Cell	\$21.00 Ea.
275 + 7 Cell	\$24.00 Ea.
280 + 6 Cell	\$28.00 Ea.
280 + 7 Cell	\$32.00 Ea.
290 + 6 Cell	\$38.00 Ea.
290 + 7 Cell	\$42.00 Ea.
300 + 6 Cell	\$55.00 Ea.
300 + 7 Cell	\$60.00 Ea.
4 Cell Also Available	

* SANYO 1700 SCR CELLS CALL FOR PRICE

* N 1000 SCR DRAG CELLS

* SANYO RECHARGEABLE "AA" \$ 1.95 Ea.

* ASK ABOUT THREE OR MORE SPECIALS ON BATTERIES

* POWER SUPPLY/POWER SOURCE 30

AVAILABLE MOTORS

East Coast 24° & 38°
Phoenix 24°, 32°, & 45°
Iron Man 24°
Trinity 24° & 40°
Fantom 24° & 36°

BUSHING MODS

East Coast 17 & 23
Phoenix 20 & 23

HAND WOUND BUSHING MODS FANTOM 12D, 12T 13D, 13T, 14D, 14T, 14Q, 15T, 15Q, 16D, 16T, 17T

DRAG MOTORS FANTOM 9 Single & 10 Single

DAVIS MOTOR SPORTS Battery Discharge Tray Wing Locks

S & K PRODUCTS

Battery Claw
Brush Vice
Motor Station
Hood Alignment
Air Inducted
Truck Body

MOTOR BRUSHES

R-12, R-17, R-21
Race Prep "R"
Race Prep "P"
Trinity Silver
Buds Hollow
Cam & Phoenix

MISCELLANEOUS

B & T Copper Bars
14 Gauge Wire
Battery Braid
Shrink 3 Colors

WRITE OR CALL FOR FREE CATALOG • DEALER CALLS WELCOME • MASTER/VISA ACCEPTED

MRP
**BUD
DRY**
**Inboard
Skater**

attention R/C car owners! Want a change of pace? **Try R/C electric boating;** you already have almost everything you need to run a boat—batteries, a charger and a 2-channel radio. **The crossover is easy,** and all the equipment is compatible. Some of the most popular boats are manufactured by MRP, and its latest offering—the **Bud Dry Skater**—should be a winner.

By the time you read this, the Bud Dry Skater should be **available** at your local hobby shop. For this review, I was lucky enough to get an early production kit that the guys at MRP had **mostly assembled.**

They also sent me Bob Welch's prototype; it's a little different from the production version, and it gave me a glimpse of the **design and forethought** that goes into all MRP boats.

by DOUG SAMRAH

why?
ASK WHY

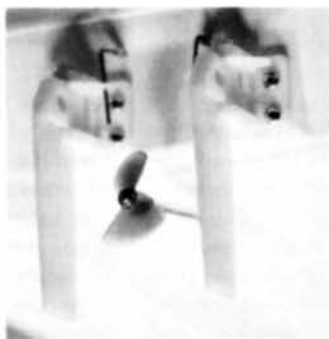
Because my kit was an early one, it didn't include a final version of the instructions. I was given pre-production instructions, which were well-written and loaded with photos. I have MRP's twin-outboard-powered Waterheater, which is a blast to run, and I was interested to see how this

the shaft alignment correct.

Because the kit had been mostly assembled for me, I only had to install the radio gear (the receiver and two servos) and mount the speed controller. This boat runs with a single motor/battery setup. The battery must be in the center to balance the boat correctly.

Install the speed-controller servo next to the prop shaft and make sure that you put the servo wires around the other side of the servo, away from the shaft and coupler so the rotating parts can't rub the wires and damage them. As I mentioned earlier, my boat came almost ready to run out of the box—even the decals had been applied—but all the steps are explained

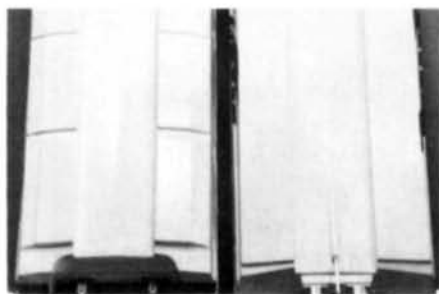
well in the MRP instruction manual, with enough pictures to make them easy.



The twin rudders and the stock MRP red prop.

CHECK IT OUT

First, I ran the stock version of the boat. The speed controller has a voltage-dropping resistor that gives you only half-speed in reverse to ensure that you won't swamp the boat. I tried it once, and it worked, but I don't use reverse much. If you want to use this boat in a scale contest, or just play with docking maneuvers, the stock setup is the way to go. Control is positive and solid. The boat is mild enough for absolute beginners, and, although top speed can't be described as fast, it moves along well. The stock boat has only one battery pack and a long run time, so you won't be changing batteries all day.



Here's a good look at the difference between the Waterheater (left) and the Bud Dry (right). You can see that this is a new boat from the hull up!

model would compare with it. There were some differences, the most noticeable of which was the hull. The Waterheater hull has "steps" in the bottom and the Bud Dry doesn't. The outboard skater needed them for handling, but MRP's research showed that they weren't necessary for the inboard model. This isn't just the same hull dressed a little differently, this is a new boat!

The Bud Dry comes with a Wizzard motor and a forward/reverse microswitch speed controller. A twin-motor gear drive and a 2-speed forward speed controller are options. I used the boat both ways, and each setup has its benefits.

One of the first things I did was to play with Bob's prototype. I noticed that the prop shaft was about 1 5/8 inches longer than the stuffing tube and there was a lot of play in the prop end of the shaft under full power. There are two ways to look at this: you could say that, in the water, the boat probably won't vibrate as much; or you could say that all that vibration would sap speed from the boat. I took the second view, so I tapped out the boat's standard stuffing tube, and replaced it with one that's 1 5/8 inches longer. I glued the new tube in solidly to get the most power to the prop, and I did it with the motor in place to keep

BUD DRY INBOARD SKATER



PHOTOS BY DOUG SAMRAN

SPECIFICATIONS

Type: Inboard offshore catamaran
Length: 32 inches
Width: 10 inches
Weight: 4 3/4 pounds
Hull material: Vacu-formed ABS
Power req'd: Stock single 550 Wizzard motor (twin-motor gear drive optional)
Battery req'd: Single or twin. 6- or 7-cell SCE-type pack
No. of channels req'd: 2 (rudder and throttle)
Suggested price: \$250 (deluxe kit)

Features: the deluxe kit includes motor, forward/reverse speed controller, running hardware and a decal set. Optional high-performance pack available.

Comments: the stock Bud Dry is tame enough for novices; it could also be suitable for scale contest work. With the performance pack, the boat is very fast, yet extremely stable. It can take turns at full throttle.

After a few runs, I went back and installed the performance options. The gear drive had been assembled by MRP, but it's easy to do yourself. Just make sure that you line up your gears and put a little thread-locking compound on the setscrews so they don't come loose. The unit fits easily in place of the single motor. The two-speed, high-performance speed controller is easy to install in place of the standard one.

GET WET

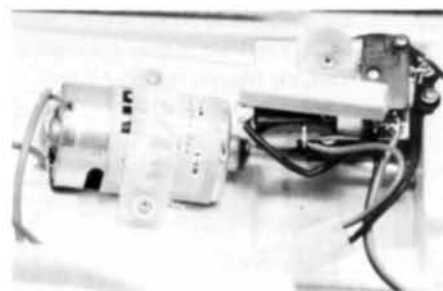
Out at the pond, another difference between the Bud Dry and the Waterheater became noticeable.

Because the outboard motors add weight to the Waterheater's rear end, it couldn't take tight turns at full speed. The Bud Dry's motor weight is inside the boat and its center of gravity is much lower, so you can let this boat rip through the corners without worrying. The Waterheater's top speed on the straightaway is faster, but it can't corner nearly as well as the Bud Dry, which is more forgiving for less-seasoned drivers. I liked that I could get the boat flying and not let off the throttle for the full run.

With the twin-motor gear drive

and two battery packs, run times will be short. If you can get 1700mAh battery packs for this boat, you can extend the times a little, but there's definitely a trade-off: higher speed means shorter run time. Take four battery packs with you to the lake. That way, as the boat's motors cool down, you can have two charged packs ready to go. Remember, always cool your motors between runs; they'll last much longer!

The new MRP Bud Dry Skater looks terrific coming at you across the pond. The stock version is tame enough for beginners and the high-performance version is fast



This is the stock Bud Dry's motor and microswitch speed controller. The controller provides full forward speed and half-speed reverse.

enough to please experienced drivers. You'll be proud to have either version on your shelf!

*Here is the address of the company that's featured in this article:
 MRP, 201 W. Lincoln St., Banning, CA 92220.

NITRO NEWS

BEATING BURNOUT

by JEFF BRONSTEIN

REMEMBER, when I first began to race (oh, so many years ago!), working on my car late into the night before a race day. Then, in the morning, I'd jump out of bed so that I could be the first one on the track. Sound familiar? Well, many racers live and breathe racing (OK, guilty as charged), but when it stops being fun and starts becoming work, something is very wrong. Serious racers pace themselves; they savor the gratification that the sport offers. Others just fade away into the R/C cosmos. The questions are: what causes them to fade away, and how can you prevent it from happening to you?

THE SYMPTOMS

Is it painfully difficult to keep up your enthusiasm? Has sleeping in become Sunday morning's major highlight? It's hard to imagine that anyone could become completely jaded about R/C racing, but the fact is, it happens to many of us. Eventually, everyone gets the sinking feeling that racing just isn't as much fun as it used to be. You walk out to the workbench, but you just can't motivate yourself to drudge through another night of working on your car. Sure, the shocks and the diff need to be rebuilt, but what the heck. You'll do it next weekend, right? This, my friends, is racer burnout, and if you're not careful, it will be fatal to your interest in R/C racing.

Novices are particularly susceptible to

a kind of burnout that I call "overload syndrome." Its chief cause is the growing complexity of racing. Competition in general has become very technical, especially in gas racing. In one year, a club may attract 100 or so people who are very interested in becoming racers. Of those, only a few will make it to the hobby shop for more information. Less than 10 will actually buy a car, and only one or two will become regular racers.

Many potential racers lose interest when they realize how much effort competition involves. That's why friendly, knowledgeable, hobby-shop owners are so important to the growth of R/C racing. Beginners shouldn't be afraid to ask questions, and you experienced racers should make yourselves accessible. Don't build walls between the "good guys" and the "board bangers." Remember, all racers are created equal.

Lately, many racers have lost interest because of economic burnout—when certain competitors have access to superior equipment and greater support. Let's face it: speed costs bucks, no matter which scale you race, and it's particularly frustrating to lose a race simply because the "best" gear is out of your financial reach. This has recently become the primary focus of electric racing, and it's tearing the sport apart. The turmoil surrounding batteries and motors is only the tip of the iceberg. Fortunately for gas racers, nearly every trick part and super-modified engine is still affordable, but the situation could quickly



It's 2:15 a.m.; do you know where your car is? When your car sits on the workbench in pieces for more than a week, it may be time to put a little craziness back into your racing. Try a concourse competition, change classes, go nuts!

get out of hand. Despite the increasing sales of gas-powered cars, the prices of top-of-the-line engines have taken a sharp upward swing. It may be only a matter of time before this type of equipment becomes the exclusive property of a few sponsored racers.

Another widespread cause of burnout is the "rut syndrome." If every race seems to drag through the same monotonous pattern weekend after weekend, drivers can develop an aversion to racing. The rut syndrome can also strike an entire club or track. If attendance at club meetings or weekly races dwindles to only a few members, or if the track deteriorates to the point where it's almost falling apart, you can be pretty sure that burnout has hit.

One way to get yourself out of the rut is to diversify your racing. Change from roadcourse to oval, or from off-road to on-road. Do something different. Start a trend. Get crazy! Help keep score, or join the club's board of directors. Better yet, go out of town for a race or two. Nothing gets the adrenaline going again like racing against new competitors on unfamiliar turf. Do whatever it takes to keep the thrill of racing fresh and new.

To break up your club's routine, hold a swap meet or a family barbeque to break



A little-known fact: cutting your car in half reduces tire wear. NOT!

NOT JUST ANOTHER PRETTY FACE



"All of my products have extensive research and development behind them to be truly new and innovative."



Dan's Motor Spray and Banana Lube are non-toxic and will not melt plastic parts.

The Banana Lube provides great long-lasting lubrication.

Send \$3.00 for Catalogue and Decals

BANANA LUBE #10019



MOTOR SPRAY #10010



DAN'S RC STUFF
9626 COZYCROFT AVE. #C
CHATEAUX, CA 91311

Dan's new battery bars are designed for easy use and high conductivity. They're even gold plated for non-corrosion.

Great ideas like these, plus motor-homes, body foams, Dan's stands, and more, make the choice of Dan's RC stuff the right choice.



PHONE:
(818) 700-6912
FAX:
(818) 700-2940

"GOLD BARS" #10027

"NOW WE'RE HAVING FUN"

If the sport is truly in your blood, there's always a way to keep the fun alive. Race-car technology constantly changes and evolves, and racers must adapt as well. Just keeping up can be a challenge.

up the routine. If you own a track, sponsor a free race day, or buy a round of pizza for your racers. It only takes one bright spark to ignite a new fire.

Probably the most unfortunate cause of burnout is the "whiner syndrome." Believe it or not, some racers can't get along. I've seen clubs so dysfunctional that in any group of three drivers, two of them won't agree on even the smallest subject. We're only human, but nobody wants to be around a bunch of complainers, and when it starts to affect other racers, the entire organization will suffer. The trait that most successful clubs share is that their members not only race together, but they're also friends off the track. There's no black-flag penalty for whining, however, so I can only tell those who whine to leave their personal problems at home. Everyone should try to be positive at the track, e.g., cheer on the competition or a newcomer during the race, or pass on a little speed secret to someone who needs it. The next time you're on the drivers' stand, you'll feel as if you own the race-track, and when you feel good, you'll drive better.

If the sport is truly in your blood, there's always a way to keep the fun alive. Race-car technology constantly changes and evolves, and racers must adapt as well. Just keeping up can be a challenge. When stagnation sets in, stir things up and get people going again. Remember, R/C racing is cheaper than therapy!

Ballistic™ Batteries

☆ **1991 R.O.A.R. ☆**
AND N.O.R.R.C.A.
NATIONAL
☆ **CHAMPIONS ☆**

SANYO® 1700 SCR—POWER-CYCLED 6 TIMES AND MATCHED AT 27 AMPS
TEAM 230+ = \$12.00 ea RACE 220-230 = \$9.00 ea STOCK up to 220 = \$6.00 ea

PANASONIC® 1700 SCR—POWER-CYCLED 8 TIMES AND MATCHED AT 27 AMPS
TEAM 245+ = \$12.00 ea RACE 235-245 = \$9.00 ea STOCK up to 235 = \$6.00 ea

SANYO® 1400 SCR—POWER-CYCLED 5 TIMES AND MATCHED AT 30 AMPS
TEAM 190+ = \$9.00 ea RACE 185-190 = \$7.50 ea STOCK up to 185 = \$5.50 ea

1991 THUNDERDROME®—TQ + WIN MODIFIED
AMATEUR A-MAIN—TQ + 2ND EXPERT A-MAIN

LAKE WHIPPOORWILL 1991-REEDY RACE OF CHAMPIONS. 1st PLACE A-MAIN

FINISHES IN BOTH STOCK AND MODIFIED AMATEUR CLASSES

1991 J.G. DIRT OVAL CHAMPIONSHIPS. 1st PLACE A-MAIN IN 2 WHEEL OPEN CLASS.
2ND PLACE OUTLAW SPRINT A-MAIN 1/2 OF THE 2 WHEEL OPEN A-MAIN DRIVERS USED BALLISTIC

BALLISTIC BATTERIES
11862 BALBOA BLVD. BOX 345
GRANADA HILLS, CA 91344



(818) 363-1625
FAX (818) 363-8261

9-5
MON-FRI
PACIFIC
TIME

Rossi®

SIG MANUFACTURING CO. now imports the complete line of world record holding **ROSSI** aircraft, marine, helicopter and race car engines. This includes a full line of parts and accessories, plus the only full time **ROSSI REPAIR CENTER** in the U.S. All **SIG**-imported **ROSSI** engines come with a full 90 day **SIG WARRANTY** against workmanship and manufacturing defects.



SIG MANUFACTURING CO., INC. . . Montezuma, IA 50171
PH: 515-623-5154 FAX: 515-623-3922 Toll Free Orders 800-247-5008

KILLER CLOD PARTS!

JPS HAS IT! Super-strong machined billet aluminum gear-boxes are a direct replacement for the stock plastic components, and feature an adjustable motor mount for a wider range of gear ratios. Along with our new Steel Gear Set, it's the ultimate Clod accessory for full-pull strength!

JPS' Aluminum Clod rims are available for either standard tires or dually IMEX-style tires in over a dozen styles. And, check out our new aluminum Axle tubes and ladder bars! For the Killer Clod- JPS HAS IT!

DEALERS! We offer Great DEALER DISCOUNTS!

JPS CUSTOM WHEELS

Send \$2 for Catalog and Stickers

P.O. Box 746, Lakehead, CA 96051
(916) 238-8122

NEW!
Now with
Stainless
Steel Screws!

• Machined
Clod
Gearbox
#7000-1



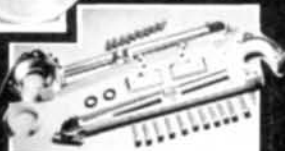
• Steering Axle
Tubes #7060

• Clod Steel
Gear Set
#7050



• Single and
Dually Clod
Rims
SOLD IN PAIRS

• Aluminum
Ladder Bars
#7070



MADE IN U.S.A.

FUTABA FXT

(Continued from page 138)

axles where they touch the bushings. To prevent wear (and to increase speed), I replaced all bushings with ball bearings. (The FXT takes 11, 5x11mm bearings and one 5x8mm bearing.)

After I had added bearings all around and replaced the shock oil with Associated* 30WT oil, I was ready for some serious testing. I met several friends at the local track, and we took turns putting the truck through its paces. Next time, I'll go alone so that I can drive it more!

We were impressed by the FXT's performance. It held tight in the corners and took jumps like a champ. It handled even the tightest turns without understeer or oversteer. No more bouncing off the walls! One friend even commented, "You could be real competitive with that truck; all you need is to learn to drive!"

The FXT is a great little truck, and I'll never tell anyone (except you) that it's an "entry-level" vehicle. I was lucky enough to have one of the first FXTs around, but when the word gets out, I'll have lots of company!

*Here are the addresses of the companies mentioned in this article:

Futaba Corp. of America, 4 Studebaker, Irvine, CA 92718.

Twister Motors, 657 E. Arrow Hwy., Glendora, CA 91740.

Holeshot Racing Products, P.O. Box 630, Canton, MA 02021.

Associated Electrics Inc., 3585 Cadillac Ave., Costa Mesa, CA 92626.

GAS RC10T

(Continued from page 104)

head that's made specifically to fit the O.S. CZ-R.

SUSPENSION

Kunio knew how much R&D Associated had put into the RC10T's suspension, so he wasn't about to mess with it. In fact, he went to great lengths to ensure that his gas conver-

(Continued on page 151)



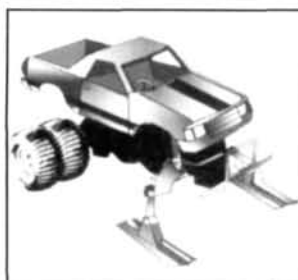
PRO DYNO



10, 15, 20, 25, 30 amp loads controlled by LAVco constant current circuitry. Voltage regulation prevents the power supply from influencing the results. Pack voltage simulation for 4, 6 and 7 cells at each load...15 settings!! LCD displays for POWER (efficiency) and optical sensed digital RPM. Custom flex-coupling prevents misalignment drag from influencing the test. The **Pro DYNO** is now available at a retail price of \$600. For stock and mild modified motors, LAVco's **Sport DYNO** retails for \$350.

MADE IN AMERICA

LAVco USA 3150-B E. La Palma, Anaheim, CA 92806 • (714) 632-7262 • FAX (714) 632-8705



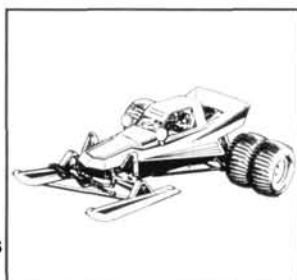
NEW RACING POSSIBILITIES WITH WINTER CONVERSION KITS

- The threat of snow or ice won't stop racers now with these exciting winter conversion kits
- Skis mount to front of 2WD cars and trucks taking the place of front wheels
- High-quality computer designed and injection molded parts
- Each kit includes: steerable front skis, rear dual wheel adapters, stabilizers, hardware and instructions
- Now the excitement of R/C racing will last all year round

AVAILABLE AT YOUR LOCAL HOBBY SHOP

Vortex+
DISTRIBUTING

#108 2301 AVE C. N. SASKATOON, SASK. CANADA. S7L 5Z5 PH: (306) 653-0038



HAVE WINGS; WILL FLY

The Guru's of traction are breaking new ground AIR!

This incredible Chevy Lumina Stock Car features a

fully adjustable rear wing which is also

removeable for those fast

Velodrome style tracks.

The roof ribs run from

the windshield to the

spoiler to give the body

maximum straight line stability.



99000 - 1/10

PSE
PRO SERIES EQUIPMENT

13927 PROGRESS PARKWAY N. ROYALTON, OH 44133

GAS RC10T

(Continued from page 146)

sion's weight distribution was as close to that of the electric car as possible.

Kunio *did* make one change. Because the rear suspension is, in effect, installed backwards, toe-in and arm rake had to be altered. He installed RPM suspension blocks with 3 degrees of toe-in, then he mounted the stock hub carriers in "reverse"—right side on the left and left side on the right.

PARTING THOUGHTS

Kunio's RC10T gas conversion is one of the slickest rigs I've ever seen. Every part and modification looks as if it were done at the factory! The truck drives just like its electric kin, but when that engine screams, there's no mistaking it for an electric! Look for 1/10-

scale gas to be a major part of your R/C fun in the future!

**Here are the addresses of the companies mentioned in this article:*

Associated Electrics Inc., 3585 Cadillac Ave., Costa Mesa, CA 92626.

O.S., distributed by Great Planes Model Distributors, P.O. Box 9021, Champaign, IL 61826.

Airtronics, 11 Autry, Irvine, CA 92718.

RPM, 14978 Sierra Bonita Ln., Chino, CA 91710.

Kyosho, distributed by Great Planes Model Distributors.

McCoy, 5674 San Bernadino St., Montclair, CA 91763.

DuraTrax, distributed by Great Planes Model Distributors.

Bru-Line Industries Inc., P.O. Box 3786, Center Line, MI 48015.

Du-Bro Products, 480 Bonner Rd., Wauconda, IL 60084.

Fox Mfg. Co., 5305 Towson Ave., Fort Smith, AR 72901.

Futaba Corp. of America, 4 Studebaker, Irvine, CA 92718.

Kimbrough Products, 1420 E. St. Andrews Pl., Unit F, Santa Ana, CA 92705.

Losi, 13848 Magnolia Ave., Chino, CA 91710.

Lunsford Racing, 619 First Ave. E., Albany, OR 97321.

MIP, 746 E. Edna Pl., Covina, CA 91723.

Omega, distributed by Morgan Inc., 200 W. Lee St., Enterprise, AL 36330.

Robinson Racing Products, 165 N. Malena Dr., Orange, CA 92669.

Tecnacraft, 1335B Dayton St., Salinas, CA 93901.

Tekin Electronics, 970 Calle Negocio, San Clemente, CA 92672.

IEDA DRAG NATS

(Continued from page 120)

Mark Sanzogni took a bye run in the first round, went by Wayne Rydzy in round two and met up with Emanuel Soto in the Alcohol Funny Car Final. Mark's first major drag-meet win came 2.418 seconds later. He hasn't been drag racing for very long, but his cars have mondo horsepower! We're keeping an eye on this guy. Pete Malinguaggio took the Consolation win.

The Top-Fuel Funny Car eliminations were strange, indeed. Top qualifier Kent Vahlsing, who has won almost every funny-

(Continued on page 153)

ERI

associates, inc.

OVER
150

COMPANIES
STOCKED

THE RC CAR
SPECIALIST

IF IT'S IN THIS MAGAZINE,
WE PROBABLY CARRY IT!!
PLEASE HAVE YOUR
LOCAL HOBBY SHOP CALL US!!

(914) 268-5090
FAX (914) 268-0462

HOBBY STORE-FRONTS ONLY need call!!



NEW LINES
CHICAGO MODEL
DUMOR
POWER SOURCE
T.D. ENTERPRISES
TOP RACING

WHAT'S HOT

TPS 30 amp POWER SUPPLY
DUMOR STAR FORCE SPURS
DMS WINGLOCKS
THE "PROTECTOR" BUMPERS
JACO TIRES
UNGAR IRON
WIHA R/C TOOL SET
BEL RAY BEARING LUBE
PROTOFORM BODIES

WHAT'S NEW

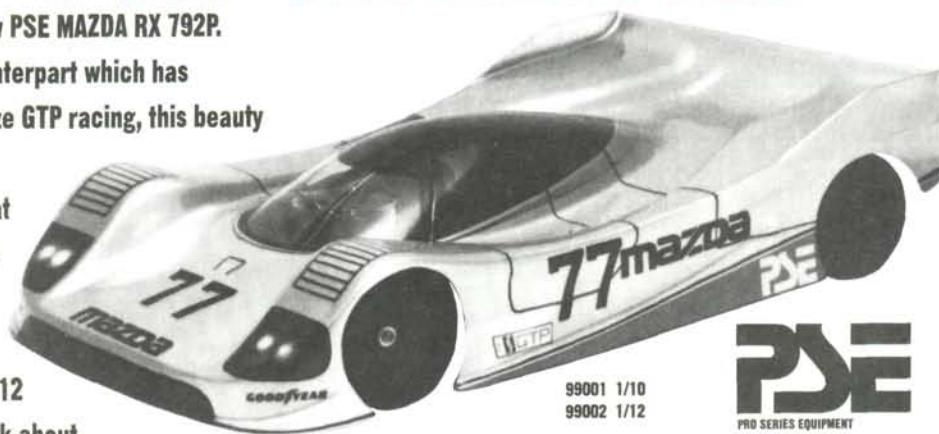
THORP TRX1 GEAR SET
TRUE TURN HARDENED ALUM. AXLES
PARAGON TITANIUM DAMPENING POST
COBRA LATHE FOR STOCK MOTORS
IRONMAN GREYHOUND STOCK MOTOR
SANYO 1700 SCRs
DAHM's SCREAMER RC 10 BODY
A&L KING CAB TRANNY & SLIPPER
OZONE TRUCK FOAMS FOR RC10T
TEKIN 610R (W/ REVERSE)
TRAXXAS HAWK2

50 NORTH HARRISON AVE., UNIT #14, CONGERS, NY 10920

FLY PSE AIRLINES

Fly to the finish line with the new PSE MAZDA RX 792P.

Patterned after it's full size counterpart which has revolutionized the face of full size GTP racing, this beauty is sure to do the same for radio control racing. Recognizing that the secret of this design is in its aerodynamically correct lines, it was our intent to bring these same advantages to 1/10 and 1/12 scales... and we succeeded. Ask about them at your favorite airport raceway.



13927 PROGRESS PARKWAY N. ROYALTON, OH 44133

IEDA DRAG NATS

(Continued from page 151)

car meet in the past year, started the round by launching off the starting line backwards against a stunned Elicca Sanders. Sanders then drew the bye run in round two, but she was stopped by Ron Goca's 2.04 in round three. On the other side of the ladder, AJ's Al Hood passed Ken Mason and Tim Smith to meet Goca in the final. Goca took the win at 2.07, with Kent Vahlsing coming back to take the Consolation win over Nelson Llorens.

The Alcohol Dragster Final saw Emanuel Soto's short car improve with every round—1.98, 1.97, and 1.957 in the final over Terence Holt's faster, national record-setting 1.952. These two cars couldn't have been more different in their

approach, but their performances were both world-class! Congratulations, Emanuel! With his 2.06, Gerardo Chang Diaz took the Consolation Round over Santo Musco.

With darkness falling, it was decided that racers should pull their autos up to the sides of the track so their headlights would illuminate it. It was a weird scene, and the little cars looked twice as fast in the dark as they did in daylight. The finals would happen West Coast style—under the lights!

Top Fuel TQ Derrick Roth looked as if he would take his "Nuclear Banana" to the win by virtue of his 1.80 qualifier, but Gerardo Chang Diaz had other plans. With a 1.883 holeshot, Diaz nipped Roth in the final and took the title back to Puerto Rico. Diaz is truly a world-class drag racer, and his high-quality equipment and professional

attitude will probably keep him at the top of his field for a long time. Roth's 75.75mph clocking in round two gave him the top-speed end of the national record. Eduardo Marquez took the Consolation Round over Pat Scire.

In the dark, the Unlimited Top Fuel Dragster eliminations boiled down to the Consolation contest of Tito Cordero and Roth, who ran a world-low-ET 1.727 at 77.29mph to beat Cordero's 1.89, and the top four qualifiers in the semis: Californians Tim Smith and me, and New Yorkers Chris Fine and Joe Miano. In the first semifinal, Miano's awesome string of 70s came to an abrupt end about 40 feet off the launch pad when his car swerved left over the center line into my lane—advancing me to the

(Continued on page 155)

Hohwart • Masami Hirotsaka • Cliff Lett • Chris Doseck • Joel "Magic" Johnson • Jammin' Jay Halsey • Gil Losi • Tyree Phillips

Masters of R/C Auto Racing Collector's Card Box Set

LIMITED PREMIER '92 EDITION

The First and Only R/C Racing Card Collection!
155 Full Color Cards of your Favorite Drivers
Personalities and Products: World and National Champions including Masami, Neisinger, Joel "Magic" Johnson, Cliff Lett, Chris Doseck, Ralph Burch, Bud Bartos and Rick Hohwart

#1301 Masters of R/C Auto Racing Card Collection. Features Full Color Cards for 155 of the finest Drivers, Cars, Personalities, Innovative Products, and Race Facilities in the World of R/C Racing. Limited Premier Edition packaged in Full Color Box. Randomly inserted Autographed Driver Cards. Production limited to only 12,000 sets. A true R/C Fan Treasure. **\$19.95**

#1302 Promo Card: The Masters of R/C. Limited Promotional Card (not included in our regular set) produced to commemorate the World Championships and the Premier of our Card Set. Protective hard plastic sleeve. (Joel "Magic" Johnson, Masami Hirotsaka, Gil Losi, and Jammin' Jay Halsey) Complete your collection! **\$ 2.00**

#1303 World's Finest Set. 16 cards depicting the Best in the World. Includes World and National Championships, 75 mph Thunderbolt car, Masami, Reed, and Bartos' Champion cars. Packaged in clear plastic box. Limited to 10,000 Sets! **\$ 7.95**

#1304 Save! Masters and Worlds Set Combo. Both the 155 Card Boxed Masters Set and the 16 Card World's Finest Set. Buy Both Inaugural Collectible Sets and Save! **\$25.95**

#1305 News: Champions of the World. Just want the Best? A plastic boxed set of just the 10 IFMAR World Champions PLUS the Limited Promo Card PLUS Guaranteed to include one Rare Autographed Driver Card in each set (includes drivers Lett, Masami, "Magic" Johnson, Jammin' Jay Halsey, Gil Losi, Kent Clausen, Tony Neisinger, Doseck, Carbonell, Collins) **\$ 8.95**

Special Limited Offer

#1306 VERY LIMITED. Uncut Sheets of All 180 Masters of R/C Auto Racing Cards. TWO Complete Huge Poster Size Sheets Suitable for Framing. Autographed and Numbered by production artist, includes Certificate of Authenticity. Extremely collectible. Once gone, no more will be available. LIMITED TO 750 INDIVIDUALLY NUMBERED SHEETS. **\$39.95**

Send \$2.00 for our complete catalog of cards and collectibles:

TO ORDER: Clip, Ad & Circle Your Selections

Cashier's Checks & Money Orders: Immediate Shipment

All Personal Checks Must Clear

No P.O. Box, FPO, or APO Orders

Allow 4 Weeks for Delivery

Subtotal

(MI. Residents Add 4% Sales Tax)

SHIPPING & HANDLING

TOTAL ENCLOSED

RU NUTS! SEND MY CARDS IMMEDIATELY!! (please print)

MAKE CHECKS PAYABLE TO:
MASTERS OF R/C AUTO RACING
1822 W. Milham Rd., Suite 1
Portage, MI. 49062
FAX 616-344-2282

Name _____
Address _____
City _____ State _____ Zip _____

Hohwart • Masami Hirotsaka • Cliff Lett • Chris Doseck • Joel "Magic" Johnson • Jammin' Jay Halsey • Gil Losi • Tyree Phillips

Autographed Driver Cards randomly inserted

Don't Be Left Out Only 12,000 Total Sets

complete biographies and stats full color cards

extremely limited!

Masters of R/C Auto Racing ...taking R/C racing to a higher level

Tony "Van Halen" Neisinger • Kyle Reed • Vehlou • Ralph Burch • Dieter • Ricky Jordan

Kyle • Ireland • Blackstock • Ready • Beckwith • Kinno • Dobson • Dunn • Kell

IEDA DRAG NATS

(Continued from page 153)

final. On the other side of the ladder, number-two qualifier and defending World's winner Chris Fine stopped Tim Smith's bid for a repeat of his Southern Nationals victory with a 1.784 at 75.75mph.

In the last race—the Unlimited Final—it was East versus West again with Astro Flight motors battling it out against Fine's "Big One" motors. Chris Fine showed why he's truly the "Big Daddy" of the sport, as he blasted to a 1.789 to beat my 1.81, with my red light thrown in for insurance. Hey, you gotta gamble on the tree when you're up against this guy! Just wait until he comes out to the West Coast!

DRAGS WITHOUT SNAGS

All in all, even the rotten weather and quarter-pound mosquitos couldn't dampen the spirits of the more than 100 competitors in this year's World's meet. It was a pleasure to compete against so many different groups of racers from all across the nation. I learned about the latest tuning tricks and observed the remarkable ingenuity exhibited by racers whose equipment puts them on the cutting edge of R/C performance. There's great diversity in drag racing, but it shares one simple goal—the quest for the ultimate acceleration. IEDA drag racing has a promising future, indeed. ■

MOTOR MYSTERIES

(Continued from page 126)

increasing the pinion size. Whether you have 2-inch tires with a 108 spur or 2.4-inch tires with a 125 spur, if your rollout is the same, the overall gearing is the same. The only difference would be the pinion size. To determine the best gearing for the track, it's very important to use a stopwatch to time your laps.

SPRINGS

Tuning springs on stock motors can be as confusing as selecting brushes. One manufacturer's heavy spring may be what another considers a medium spring. Manufacturing tolerances result in springs of the same grade that vary in tension. A spring tester is a good investment, because it rates the tension numerically (e.g., a "1" would indicate the least amount of tension) rather than describing it as just "heavy" or "light."

If the car seems sluggish leaving the turns, try heavier brush springs. A heavier spring generally increases torque but decreases rpm. If you use a heavier spring, you must increase the gearing slightly. You may also notice a small drop in run time with the heavy spring.

If the punch off the turns is adequate, a lighter spring may increase the rpm slightly and, in turn, increase the top speed for a given gear ratio. On some oval tracks where the corners are taken at full speed, a lighter spring may be beneficial. In this situation, the motor accelerates only once (at the

(Continued on page 166)

NO TEAM WEAPON

THE LAST WORD IN YOUR ATTACK PLAN

"TITANIUM"

Solid Titanium Dog Bones For RC-10T.
they are stronger than the originals!

PSE

PRO SERIES EQUIPMENT

13927 PROGRESS PARKWAY N. ROYALTON OH. 44133



SCI[®] CORPORATION MONSTER CARD

This sturdy-looking unit provides a true, full-powered, fully controllable reverse, without any delay. **MONSTER CARD** has 16 MEGAFETs—eight for forward and eight for reverse. This makes reverse equal in every respect to forward. This controller can provide a twin-motor application. It synchronizes pulses with the transmitter to minimize rf interference.

FEATURES INCLUDE:

built-in heat sink to carry a heavy load; an automatic limiter; built-in BEC; a battery recharging circuit; SMD technology; 13GA silicone wire; an SCI multiconnector; and rugged, high-voltage Megafets.

SCI POWER CORPORATION

P.O. BOX 13099, AIRGATE STATION SARASOTA, FL 34278, USA

CALL TOLL FREE (800) 673-9563



perfect



RACING BATTERIES

Money back GUARANTEE!

- Satisfaction **GUARANTEED** or your **MONEY BACK!**
- Each cell is conditioned for maximum performance.
- Each cell individually labeled with run time, average voltage, charge rate, discharge rate and internal resistance.

- State of the art matching equipment.
- Dealer inquiries invited.



216-235-0709

PERFECT MATCH 27113 Brookpark Rd. Ext. Suite #134 N. Olmsted, Ohio 44070

The Hemi is Back

ONLY
\$12⁹⁵

1/10 Scale
10411

A Complete
Wiring Kit Is
Now Available
(#10411A)



Parma International, an industry leader in radio control accessories and slot cars, now brings back this classic; the 1/10 scale Hemi Motor Kit.

Features include full bell housing, blower, many chrome parts, optional display stand, optional removeable heads and valve covers. Easy to follow instructions make assembly a snap! Available now at fine hobby shops everywhere.



parma
INTERNATIONAL INC.

13927 Progress Parkway • North Royalton, Ohio 44133

LOOK FOR PARMA AT THE RCHTA SHOW!

Parma regrets we cannot supply individual orders on a retail basis. For parts and information, contact your local Parma dealer.

SEND \$3.00 FOR A FULL COLOR CATALOG

High Quality
Injection Molded Styrene Kit.

MOTOR MYSTERIES

(Continued from page 155)

start); therefore, building rpm is more important than torque. A lighter spring could make the brush bounce or float under a heavy load. This "float" causes a black haze to form on the brush, which limits the amount of current that the brush delivers to the motor. In addition, the brushes may bounce off the commutator and cause severe arcing under load, which will destroy the commutator and render the motor useless.

Use the spring tester before and after you run the motor. Some springs are more susceptible to heat than others. If the temper on your spring changes, the motor's performance may change. You may think that your motor is bad when it's actually the springs that cause the motor to run flat.

LUBRICATION

The majority of stock motors have porous bronze bushings that require frequent oiling. Most of the oils on the market, e.g., Bud's and Trinity, work well. Just place one drop on each bushing. New bushings tend to be dry, and you'll have to oil them more often, but don't overdo it, especially on the brush end of the motor. Too much oil can damage the motor and the brushes, and this will, of course, affect performance.

COMM DROPS AND BRUSH ADDITIVES

Revtech*, Class and Racer's Choice* all manufacture brush additives that increase power and decrease brush glaze. (Brush glaze is responsible for that mellow, no-punch feel that's common late in the race.) I always use a brush additive when I race stock.

DYNOS

A number of dynos are available to help increase horsepower. Some are relatively inexpensive; others could drain a college fund. The new generation of dynos that load

(Continued on page 183)

1/16 Scale NEW Models

Kits Starting at \$795.00

Truck Sports Cars Indy
Hot Rod Super Modified
Pro Stock Funny Car Top Fuel Dragster
Super Speedway Grand National

FEATURES:

Hand laminated Fiberglass Bodies in 6 colors • T-Bird, Grand Prix, Olds, Monte Carlo, Imp, Z, Firebird, Corvette • Loden, Lumina, & T-Bird • Hot air welded 4130 Chrome Moly Tubular Steel Frame • Dual Disc Brakes, ventilated • Swivel bars (Rear & G/A) • Coil over suspension w/ H.D. New Era Shocks, Independent Front Suspension w/ 4130 Tubular Control Arms • Caster, Camber & Toe • Fully Adjustable Rear Suspension w/ left & right METAL Roadends • Precision Ball Bearings throughout • 23 cc to 85cc Gas Powered Engines • Recoil Starter, Centrifugal Clutch • Spun Aluminum or Nylon Wheels

P.O. Box 7378, Nashua, NH 03060-7378

(603) 880-3453

FAX 603-888-8645

Dealer Inquiries Invited

Great gift idea:

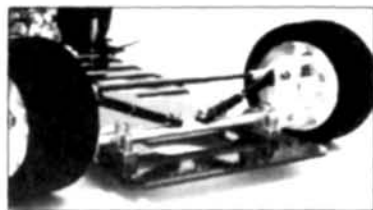
a subscription to:

**RADIO CONTROL
CAR ACTION**

1-800-877-5169

Cheetah Racing

SUPERIOR DESIGNS - SUPERIOR PERFORMANCE



SPLIT ULTIMATE FRONT END
Ultimate Front End for Associated SS10L. Split cross bar allows separate setting of CASTER for all out competitive oval racing. #PS30

We've got the front and rear ends covered. What do you think our next product will be??!

LOOK FOR IT!!

For Latest Catalog Send:
\$2.00 plus SASE, size 4" x 9"

CHEETAH RACING

10823 Amestoy Ave.
Granada Hills, CA 91344 (818) 366-2683



FLEX REAR END

Monoball mounted rear end for 10L, SS10L. Innovative design, smooths rough and bumpy tracks for superior handling and speed. DAMPENING POST BRACE adds stability to dampening post. #PS35

MOTOR MYSTERIES

(Continued from page 166)

the motor at high amp rates are the most accurate and most expensive.

Dynos measure the change in a motor from one run to the next. Also, when practice time is limited, dynos do a decent job of weeding out bad motors. The key to using a dyno is consistency. Every test must be performed in exactly the same way so that the readings are consistent. Inconsistent readings can be misleading.

Also, the advantages of a dyno will be nullified if your driving and setup skills are inadequate. Dynos are useful, but the money used to buy one might be better spent on practice at your local track. The simple fact is that you can be victorious at the national level *without* a dyno. The best way to test a motor or a brush is to drive the track using a stopwatch to record the results.

Stock racing is inexpensive, and competitive. It continues to be more popular than Modified, even with the rule changes and

the controversy. It doesn't take much to be competitive in stock; finding the correct spring/brush/gear combination is nothing more than trial and error. One brand of stock motor always works best with a particular setup and as you become more experienced, you'll be able to find the horsepower needed to win that next big race. With a little common sense, preparation and hard work, all of your stock-motor mysteries can be solved, and you can concentrate on driving your way to the next stock national championship.

**Here are the addresses of the companies mentioned in this article:*

Trinity Products Inc., 1901 E. Linden Ave. #8, Linden, NJ 07036.

Reedy Co.; distributed by Associated, 3585 Cadillac Ave., Costa Mesa, CA 92626.

Bud's Racing Products, 1575 Lowell St., Elyria, OH 44035.

Class Recreational Products, RD #1, P.O. Box 187A, Utica, NY 13502.

Revtech R/C Products, 7401 White Ln. #19, Bakersfield, CA 93309.

Racer's Choice, P.O. Box 405, Medinah, IL 60157. ■

LETTERS

(Continued from page 9)

1/8, 1/14...WHAT'S THE DIFFERENCE?

A few days ago, I was glancing through your July '92 issue and I noticed a mistake. In Chris Chianelli's "Inside Scoop," the picture next to the Tamiya 1/14-scale Tamtech car information is actually a Kyosho 1/8-scale Ferrari, not the Tamtech car.

TROY NUNES

Stockton, CA

Yes, Troy, you're correct. The car shown in the picture is a 1/8-scale Kyosho Ferrari. The three inset photos next to the Ferrari are, in fact, pictures of the Tamtech car. Apparently, when Chris woke up the morning that "Scoop" was due, he put too much gel in his hair and it leaked into his brain, temporarily transforming him into Ethel Merman! Except for a few spontaneous outbursts of "Everything's Coming Up Roses" now and then, Chris is recovering quite well.

JPH

(Continued on page 190)

New! This is the most advanced 1/10 scale race car on the market today!
ENGINEERED TO BE YEARS AHEAD OF THE COMPETITION!

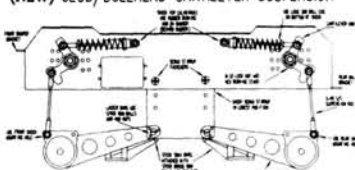


SASSY TTB-10

SASSY CHASSIS • 906 Ridgewood Drive • Cary, IL • 60013 • (708) 516-9834

- New Triple T-Bar Suspension System is supported from Ball Bearings and Controlled by Torsion Bar & Oil Shock
- 6X6 Slot Graphite Chassis for Oval or Road Racing
- Unique Aluminum Motor Pod acts as Heat Sink with Center Motor Design
- Unique Front King Pins with Camber Adjusters & Stabilizer Bar
- Innovative Captive 1/8" Stub Axles... No Lost E-Clips!
- Hollow Graphite Rear Axle with Pro Diff
- Also Included with the TTB-10 Kit:
 - 13 Ball Bearings
 - Steering Servo Saver
 - Turnbuckles & Ball-ends
 - Wheels & Trued Tires
 - Front Bumper & Body Posts
- Wide or Narrow Versions Available
- Suggested Retail Price \$399.95

(NEW) CLOD/BULLHEAD CANTILEVER SUSPENSION



SASSY CHASSIS
906 RIDGEWOOD DRIVE
CARY, IL 60013
PHONE: (708) 516-9834

SEND \$3 FOR COMPLETE CATALOG

NEW ITEMS:

CLOD/BULL CANTILEVER SUSPENSION-SHOCKS-CHASSIS	\$199.95
CANTILEVER SUSPENSION ONLY \$89.95-CANTILEVER WITH SHOCKS	\$119.95
NEW HIGH-LUSTER CLOD/BULLHEAD ALUM. CHASSIS WITH LIFT KIT	\$89.95
1992 CHEVY SILVERADO STRETCH LEXAR BODY	\$22.95
ALUMINUM BODY POSTS FOR CLOD-FOR ABOVE	\$18.95
ALUMINUM ROLL BAR-FITS MOST MONSTER TRUCKS (MUSHROOM SHAPE)	\$29.95
CLOD/BULL TRIPLE SHOCK STANDS FOR HD SUSP.-4WD \$19.95-4WD	\$24.95
CLOD/BULL STRESS-PROOF STEEL AXLES-FITS STOCK OR STEEL GEARS	\$40.95
USA-1 ALUMINUM CHASSIS & DUAL ALUM. STEERING	\$129.95
BIG BOSS, BRUTE, VETTE ALUMINUM CHASSIS & ALUM. STEERING	\$99.95
BLACKFOOT ALUMINUM CHASSIS & ALUM. STEERING	\$99.95
KING CAB/NO-LUX ALUMINUM CHASSIS & ALUM. STEERING	\$99.95
STEEL GEARS FOR STORMER 4:1 REDUCTIONS-(PAIR)	\$40.95
GOLDEN EDGE SOLDER BARS-(BAG 100)	\$18.95
ALUMINUM TURBO-CHARGER STAND & FAN WITH GUARDS	\$39.95
SPECIAL HIGH-VOLTAGE MONSTER TRUCK BATTERIES-MATCHED	\$55.00
ALUMINUM GEAR CADDY WITH HARDENED STEEL PINS-HOLDS 15	\$8.95

WHAT'S NEW



ESP MFG. Long Wheelbase Suspension Kit

The control links in this suspension kit are 1 inch longer than those in ESP's multi-link suspension kit, and it will enable you to adjust the wheelbase of your Clodzilla II/Bullhead so that it's 2 or 3 inches longer than the stock version. This allows for straighter tracking and increased stability, and it alters the angle of the shocks for better damping. The kit also includes two longer aluminum steering rods, four special aluminum shock mounts and all the necessary hardware.

Part no. ESP032

Price: \$79.95

ESP Mfg., 20 Crystal Lake Plaza, Crystal Lake, IL 60014; (815) 455-5440.



TEAM LOSI Mini-Pin Monster-Truck Tires

Team Losi has just added a high-traction, mini-pin monster-truck tire to its Naturals off-road racing tires line. It's made of ultra-high-traction natural rubber, and its unique carcass contour and precision-molded spikes make it the racers' choice for hard tracks. (Fits all popular rims.)

Part no. TLA-7620

Price: \$17.95

Team Losi, 13848 Magnolia Ave., Chino, CA 91710; (714) 465-9400.



TRINITY ProCable Hook-Up Wire

Trinity's new ProCable 13AWG copper wire is coated with 100-percent-pure silver and insulated with heat-resistant silicone. Each package contains both fluorescent pink and green ProCable.

Part nos. RC 5000 (2 feet of each color); RC 5001 (10 feet of each color).

Prices: \$4.99; \$18.99.

Trinity Products Inc., 1901 E. Linden Ave. #8, Linden, NJ 07036; (908) 862-1705.



TRUE TURN Aluminum Axles

These hardened, 7076 T-6 aluminum, hard-anodized, precision-ground axles weigh only 55 percent as much as comparable titanium axles, but they match titanium's strength. The 8-32 thread on the axle is machined out of the same piece of stock as the axle itself. The diff plate is pressed onto the axle and pinned to ensure that it's attached solidly, then the diff-plate face is machined to achieve a true running surface. The diff plate is cross-drilled, and a Delrin pin is used to accommodate notched diff rings.

Prices: \$22.45 (on-road); \$21.45 (superspeedway).

True Turn Racing Products, 3333 Harrison Ave. #5, Riverside, CA 92503; (714) 352-3002.



PARMA Rallycross Decal Sheet/ GA Astra Body

Now you can make any rallycross body come to life just by adding "the little things." Piper Cams, Mintex, Kenwood, Avon and Sachs are just a few of the popular logos on Parma's rallycross decal sheet. Parma also offers the eye-catching 1/10-scale GA Astra body that's shown.

Part nos. 10738 (6x8 decal sheet); 10316 (GM Astra clear body).

Prices: \$4.75; \$19.

Parma Int'l., 13927 Progress Pky., N. Royalton, OH 44122; (216) 237-8650.



DAHM'S RACING BODIES Terror Racing Body

Dahm's new Lexan body—the Terror—is perfect for Traxxas's TRX-1, Kyosho's Triumph and Losi's JRX-Pro and JRX-Pro SE. It's low, narrow and super-aerodynamic, and it fits each car's frame snugly. It has special molded-in vents (to keep the batteries and speed controller cool) and molded-in trim lines. The Terror is shown on a TRX-1 with Dahm's Terror Power Pan (underbody), and it comes with a Super Fin Wing.

Part nos. D107 (body only); D107C (body and Power Pan underbody).

Prices: \$17.98; \$26.98.

Dahm's Racing Bodies, P.O. Box 360, Cotati, CA 94931; (707) 792-1316.



DURATRAX Steel Main Gear

This strong, long-lasting steel gear can be used to replace the stock plastic gear in Kyosho 1/10-scale, nitro-fueled vehicles. Owing to its narrow-tooth design, it reduces friction to provide extremely smooth, efficient racing performance. It's designed for use with the Rampage, the Outlaw Rampage, the Corvette ZR-1 and the Thunderbird, and Kyosho's heavy-duty clutch bell (KYOC2960) is required.

Part no. DTXC3050

Great Planes Model Distributors, 1608 Interstate Dr., Champaign, IL 61821; (217) 398-3630.



PARAGON RACING Special FX Tire-Traction Compound

Special FX tire-traction compound was specifically formulated for rubber-capped tires. It cleans, conditions and penetrates the rubber to maximize traction off the line and during the race. It won't attract dust or evaporate prematurely. If you've been disappointed by other traction compounds, give it a try. Off-roaders! Special FX is also great for revitalizing old dried-out dirt tires. Just dunk them in Special FX, and let them sit overnight. You'll see the difference!

Paragon Racing Products, Dept. CA, 690 Industrial Cir. S., Shakopee, MN 55379; (612) 496-0091.



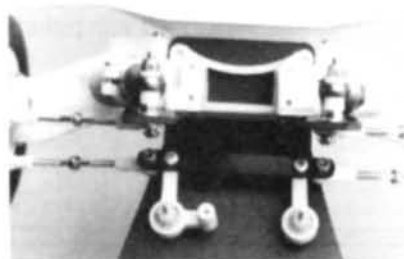
RACER'S CHOICE Diff Rings

Many racers prefer to use long-lasting, smooth, hard tungsten-carbide or ceramic balls, but few rings work well with them. Racer's Choice has the solution. Its new hardened, machined-tooled-steel diff rings have a Rockwell rating of 68+ and are more than twice as hard as some standard, stamped rings. They're also incredibly flat, so they're extremely smooth! Because they're precision-machined—not plated and stamped—they work well regardless of which side touches the diff balls. They fit into most profiled spur gears (Magic, Losi, Robinson, etc.).

Part nos. 7036 (pair of rings only); 7031 (rings and 12, 1/8-inch ceramic balls).

Prices: \$5.95; \$18.95.

Racer's Choice, P.O. Box 405, Medinah, IL 60157; (708) 980-4863.



A&L Bellcrank Steering Kit

A&L's bellcrank steering kit is now available for the Traxxas Blue Eagle LS stadium truck. It comes with smooth, long-lasting bearings that reduce the slop caused by wear and tear. (It's also available without bearings.)

Part nos. 2186 (with bearings); 2086 (without bearings).

Prices: \$29.95; \$15.95.

A&L Mfg., P.O. Box 2115, Corona, CA 91718; (714) 735-5249.



BOLINK Geoff Bodine/ Motorcraft Decals

When Geoff Bodine goes Winston Cup racing, he commands the very best. His Motorcraft Ford won the '92 Busch Clash, and it finished 3rd in the Daytona 500! With this authentic decal sheet for 1/10-scale cars (narrow or wide), you, too, can drive a Motorcraft Ford. It even includes a decal of Geoff Bodine's signature!

Part no. BL-2639

Price: \$4.99

Bolink R/C Cars Inc., 420 Hosea Rd., Lawrenceville, GA 30245; (404) 963-0252.



MCALLISTER RACING 1/10-Scale Narrow Lumina Body

McAllister's '92 Olds Winston Cup stocker body for narrow superspeedway chassis has the same great scale appearance and slick aerodynamics that made the wide Lumina body such a hit.

Part no. B-161

McAllister Racing, 1000 N. Humphreys St. #204, Flagstaff, AZ 86001; (602) 556-0665.

Descriptions of new products appearing on these pages were derived from press releases supplied by the manufacturers and/or their advertising agencies. The information given here doesn't constitute endorsement by **Radio Control Car Action**, nor guarantee product performance or safety. When writing to the manufacturer about any product described here, be sure to say you read about it in **Radio Control Car Action**.



1/8 Scale Gas

Kyosho		
Corvette Z1R	w/12CZR 1/10	259.95
T-Bird	w/12CZR 1/10	285.95
Nitro Brute	w/12Z2 1/10	229.92
Outlaw Rampage	w/12Z2-R 1/10	289.95

On Road		
Kyosho Ferrari	1/8 w/12Z2R	489.95
Serpent 6020		509.95
Impact 10	w/12C2 ARF	299.95

Off Road		
Inferno DX21 4WD		299.95
Inferno 214WD		489.99
USA-1 Nitro Crusher 21		349.99
Pirate Car		339.95
Mugen SS		429.95

Modified Engines		
Paris OS 21 RXB		299.95
Paris Rex 7 Port		309.99

Radios
Futaba, JR, Airtronics
Call For Prices

Stock Engines		
Rossi 21 Buggy 5 Port		179.95
Rossi 21 Buggy 8 Port		189.95
Serpent Racing 5 Port		239.95
OS 21 RX-RABC		239.95
OS 21 SEB ABC		129.95
OS 21 RFB ABC		129.95
OS 21 RX-BABC		239.95
OS 21 SE RABC		129.95
Tops 8 Port		329.95

Accessories		
Temp Gun		299.95
Tops Pipe		37.95
Max Mod Tire Size Machine		
Enya #5 Plug		9.95
McCoy MC-9		2.99
Start Boxes Low As		89.95

10% off all Kyosho, Serpent, Paris Parts
6950 Edgewater Drive #200
Orlando, Florida 32810
1-800-866-4354 Orders Only
1-407-292-0083 Information
1-407-292-9801 Fax 24 Hours

Visa & MC
COD too

LETTERS

(Continued from page 183)

GOTTA GET SOME GAS

I've recently become interested in 1/8-scale, on-road, gas cars. I ran electric cars off and on for about four years, then I stopped for six years. Now that I can afford to have a gas car, I looked for one—and looked, and looked. I've been to every hobby store in the Chicago area but none of the stores had any supplies or staff who knew anything about gas racing. I guess it hasn't spread to my area yet. I've never been so discouraged or sneered at as much as I've been since I started trying to get into gas racing.

BRIAN VANACORA
Schaumburg, IL

Don't give up the fight just yet, Brian—1/8-scale gas racing is a total blast, and we're going to help you. Check out the new 1992 Radio Control Racer, which features a track report on the BMT 891 road car and an extremely helpful Gas Buyers' Guide. You should also read Jeff Bronstein's monthly column "Nitro News." It contains a ton of info for gas racers. I hope this will be a step in the right direction. Good luck with your continued search.

JPH

BIG BAD CARS

I'm interested in 1/4-scale R/C gas racers, and I've been to Mile Square in Los Angeles to watch them race. I haven't seen any coverage of them in your magazine, so I was wondering if you have any information about them.

ROD WADDINGTON
Ukiah, CA

Rod, the people you should contact are Joe DePinto at GLD Racecars Inc. (370 B Commack Rd., Deer Park, NY 11729; [516] 243-4152), and Frank DeSimone at New Era Models (P.O. Box 7378, Nashua, NH 03060; [603] 880-3453). As for the coverage, our December '92 issue will feature a Track Report on WCM's 1/4-scale Grand National, and we'll feature some 1/4-scale races soon.

JPH

K&S Engineering
6917 W. 59th St.
Chicago, IL 60638

Soldering Tools



Model 1210



Model 910



Model 300



Model 212

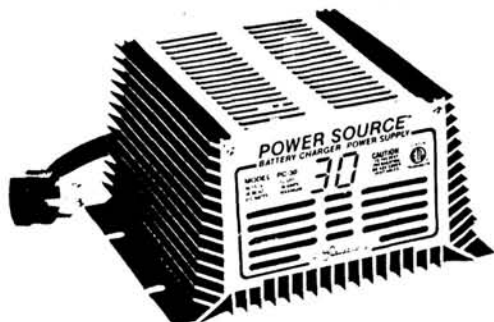
- ★ Model 212 — Pencil type iron gives 30 watts capacity of fast heat for field repairs using a 12 volt battery for power.
- ★ Model 300 — Iron gives you 30 watts capacity, is light weight, pencil type iron.
- ★ Model 910 — Iron has a capacity of 60 watts, heavy duty iron.
- ★ Model 1210 — Gun provides 100 watts capacity, heats instantly.

Send \$1.00 for catalog and prices. — Telephone: 312/586-8503



THE POWER SOURCE™ POWER SUPPLIES

The perfect portable power supply for the R/C car racer. Cool operation with no fan. Totally filtered and regulated.



More amps! Light weight! Affordable!

PC-15 (15 Amp) \$109

PC-30 (30 Amp) \$134

WEIGHT: 4.0 lbs. (PC-30)

SIZE: 7.25" x 4.0" x 6.75"

VOLTS: 14 VDC 0-85% load

12 VDC 100% load

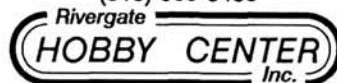
WARRANTY: 12 months

45 & 75 amp also available

Used by:

Jack Johnson - Team Losi
Kris Moore - Twister
Carlos Gonzales - Peak
Dave Cleveland - ERP

700-A Two Mile Parkway
Goodlettsville, TN 37072
(615) 859-3455



Be a Professional Pilot!



SHIELDS AVIATION has more graduates with Major Carriers than any other accelerated flight school! Complete 6 month Professional Pilot Program plus housing and job assistance for \$24,900! FAA, VA and State approved. College credit available. No previous experience required. Send a photo with your "Model" and save \$1000.

Call 800-MAGIC 57 and come to Florida!



Ace Hardware	66	Novak Electronics	48,90
Aero-Car Technology	44	Omni Models	176
Airtronics	4	Panasonic Ind. Co., Battery Sales Group	87
Alligator Designs	33	Parma International	139,166,194
Alpine Motor Sports	23	PC Hobbies	152
America's Hobby Center	53	Perfect Match	166
Andy's R/C Products	61	Prodeus Racing Products	149
Associated Electronics	36-37,90,107,140,147,156-157,63	ProLine U.S.A.	27
Autographics of California	133	Pro Series Equipment	58,149,151,153,155
B&B Software	120	Protoform	149
B&T R/C Products	138	R&L Hobbies	121
Ballistic Batteries	145	Raborn Racing Originals	45
Boca Bearing Co.	86	Race Space	74
Bolink R/C Cars, Inc.	40	Racer's Choice	105
Bruckner Hobbies	84-85	Ranch Pit Shop	34
Bud's Racing Products	11	Rave's Manufacturing	190
C&M Team Cobra	16	R.C.C.A. Action Series Subscription	67
Central Model Marketing	77	R.C.C.A. Back Issues	112-113
Cheetah Racing	183	R.C.C.A. Buyers' Mart	167-174
Class Recreational Products	106	R.C.C.A. Customer Service	152
Competition Electronics, Inc.	102	R.C.C.A. Subscription	35
Dan's RC Stuff	145	R/C International	72-73
Daranci Design, Inc.	121	R/C Motor Sports of Miami	66
Diversified Model Products	152	RC Performance Specialties	121
DTN	44	Rivergate Hobby Center Inc.	190
DuraTrax	74,79	Robinson Racing	177
ERI	151	Rocket City R/C Specialties	120
Falls Hobbies	59	S&K Racing Products	68
Fine Design	75	Sanyo Energy Corp.	142
Futaba Corp.	15,22,175	Sassy Chassis	183
GLD Racecars	59	Schumacher Inc.	82
Great Northern Hobbies	154	SCI Power Corporation	155
Hitec	21,69	Sheldon's Hobbies	134-137
Hobby Barn	8	Shields Aviation	194
Hobby King	75	Sig Manufacturing	145
Hobby Products International	7	Southside Hobbys	46
Hobby Shack	92-93	Stage III	33
Hobby Warehouse	192-193	Stealth Electronics	9
Holeshot Racing Products	121	Stevens & Son	54
Horizon Hobby Distributors	124	Stormer Hobbies	186-189
JPS Custom Wheels	146	Tamiya America, Inc.	42
JR Designs	9	Team Losi	55,88,150
JR Remote Control	41	Team Losi Tech Talk	54
Jump Juice	61	TEKIN	70,148
K&S	190	The Finest R/C	178-182
Kyosho	47,97,115	The Inside Line	106
Lavco USA	146	Thorp Manufacturing, Inc.	14,71
Lightning Products	133	Top Gun R/C Products	33
Litespeed	158	Tower Hobbies	159-165
Lunsford Racing	152	Track Directory Coupon	71
M&M Specialties	54	Traxxas	50,64,65,191
Masters of R/C Auto Racing	153	TRC	30
Model Rectifier Corporation	C4	Trinity Products	C2-3,18-19,95,101,127
Moore's Ideal Products	108	Twister Motors	13
Mugen USA, Ltd.	100	Vortex Distributing	146
Nationwide Hobbies	96	Walt's Hobby	8
Neron Associates	9	World Class Inc.	75
New Era	166		

FIRE & ICE



#14102 CYCLONE II ROAR STOCK \$28.00

FIRE ONE OF THESE BABIES IN YOUR CAR, AND ICE THE COMPETITION!

"The Motor appears to be very strong, and with proper gearing, it will compete with any other motor in it's class."

—Paul Covington of PC Hobbies, King North Carolina. Site of the ROAR National Oval Champs & The RC Car Action Shootout.

40° Timing and Wet magnets, this sucker is nothin' but fast. Warning: this motor is not ROAR approved. Not recommended for the faint-hearted!

PARMA Right! That's Parma.



#14103 STOCK PLUS (NOT ROAR APPROVED) \$28.00

PARMA INTERNATIONAL 13927 PROGRESS PARKWAY N. ROYALTON, OH 44133